

# TCRP

## REPORT 107

TRANSIT  
COOPERATIVE  
RESEARCH  
PROGRAM

### Analyzing the Effectiveness of Commuter Benefits Programs

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**TCRP REPORT 107**

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**Analyzing the Effectiveness of  
Commuter Benefits Programs**

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The nation's growth and the need to meet mobility, environmental, and energy objectives place demands on public transit systems. Current systems, some of which are old and in need of upgrading, must expand service area, increase service frequency, and improve efficiency to serve these demands. Research is necessary to solve operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the transit industry. The Transit Cooperative Research Program (TCRP) serves as one of the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it.

The need for TCRP was originally identified in *TRB Special Report 213—Research for Public Transit: New Directions*, published in 1987 and based on a study sponsored by the Urban Mass Transportation Administration—now the Federal Transit Administration (FTA). A report by the American Public Transportation Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of TCRP includes a variety of transit research fields including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA, The National Academies, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

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The TCRP provides a forum where transit agencies can cooperatively address common operational problems. The TCRP results support and complement other ongoing transit research and training programs.

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## FOREWORD

*By Dianne S. Schwager  
Staff Officer  
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*TCRP Report 107: Analyzing the Effectiveness of Commuter Benefits Programs* will be of interest to employers, transit agencies, and other stakeholders interested in commuter benefits programs and, in particular, the potential of these programs to increase transit ridership and transit agency revenues, reduce parking demand, and lower air-pollutant emissions. This report is designed to help employers, transit agencies, policy makers, and organizations that promote commuter benefits to better understand what effects they might expect from a commuter benefits program and how to quantify these effects. However, this report focuses mostly on transit benefits, a subset of commuter benefits, because more information is available on transit benefits than on vanpool benefits.

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*TCRP Report 107* offers readers:

- A guide for evaluating the effectiveness of a transit benefits program and information on how a transit benefits program can be designed and implemented to more effectively meet goals and objectives. The report also explains why evaluation is important and how to go about conducting a program evaluation.
- A summary of research on the impacts of transit benefits programs on travel behavior and on transit agencies' systemwide ridership, revenues, and costs. The research findings are based on a review of 21 surveys conducted by transit agencies and other organizations in 12 metropolitan areas, analysis of worksite trip reduction records from three regions with mandatory commute trip reduction programs, and interviews with seven transit agencies.

Overall, the report finds that transit benefits programs can be effective at meeting various goals for employers, transit agencies, and governments. However, it is critical for these stakeholders to set realistic expectations and conduct valid evaluations in order to assess these effects.

Appendixes A through G of *TCRP Report 107* are published online as *TCRP Web-Only Document 27*. To access this document, go to [www4.trb.org/trb/onlinepubs.nsf](http://www4.trb.org/trb/onlinepubs.nsf) and click on "TCRP Web Documents."



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# ANALYZING THE EFFECTIVENESS OF COMMUTER BENEFITS PROGRAMS

## SUMMARY

The federal tax code allows employers to provide to employees tax-free transit and vanpool benefits, often referred to as “commuter benefits.” By lowering the cost of riding on transit and in vanpools for employees, commuter benefits should increase transit and vanpool ridership and reduce personal vehicle use. Commuter benefits programs are also believed to be advantageous for transit agencies because they increase ridership and/or revenues while potentially lowering costs associated with cash handling and individual fare transactions. Reduced vehicle use for commuting can result in parking cost savings for employers and should, in turn, yield social benefits in terms of reduced traffic, improved air quality, reduced fuel consumption, and fewer greenhouse gas emissions. These effects, however, have not often been quantified, and there is a need for information to better assess the effectiveness of commuter benefits programs.

Although the topic of this research study is commuter benefits, broadly defined, data to assess the impacts of vanpool benefits or other financial benefit programs were limited, and, consequently, the focus of this report is on *transit benefits programs*.

This report is designed to help employers, transit agencies, and other organizations that promote transit benefits, and policy makers better understand the impacts of a transit benefits program and how to quantify these impacts for their own programs. The report has three chapters:

- Chapter 1 provides an overview of commuter benefits and a discussion of the study objective and the organization of the report.
- Chapter 2 provides guidance on *how to evaluate the effectiveness of a transit benefits program*, providing information on why program evaluation is important, how a program can be designed and implemented to more effectively meet goals and objectives, and how to conduct surveys as part of a program evaluation. Although this chapter focuses on transit benefits, many of the concepts regarding program evaluation are applicable to all commuter benefits programs.
- Chapter 3, based on research from metropolitan areas across the United States, examines the *effects of transit benefits programs* on employee travel behavior and on transit agency ridership, revenues, and costs. Chapter 3 is designed to improve the public’s understanding of how effective these programs are and under what circumstances they tend to be most effective. Although the focus of this chapter is on transit benefits programs and their impacts on transit ridership, the limited data on vanpool benefits and other financial benefits are discussed briefly.

This report is designed to be a companion to *TCRP Report 87: Strategies for Increasing the Effectiveness of Commuter Benefits Programs (I)*.

## **GUIDANCE FOR EVALUATING THE EFFECTIVENESS OF TRANSIT BENEFITS PROGRAMS**

Chapter 2 of this guidebook uses the research findings as a basis for understanding how to design and measure the effectiveness of employer-based transit benefits programs. This portion of the document is designed to provide useful program evaluation information for transit agencies, commuter organizations, and others. Chapter 2 covers setting goals and objectives, having realistic expectations, defining success, and designing surveys. The following recommendations are given in Chapter 2: link evaluation to planning, set goals and objectives, keep expectations realistic, let goals and objectives guide program design, decide how to define success, and understand how to design and administer the surveys. Each of these recommendations is discussed below.

**Link Evaluation to Planning.** Evaluation should be an integral component of program planning and implementation. Program evaluation is important as a mechanism to justify programs and secure funding, to meet requirements (in some cases), to determine progress toward meeting goals, and to identify means to improve performance. Evaluation is not simply an end product. Various aspects of evaluation occur throughout the program planning life cycle, including specifying what data are to be collected, measuring impacts, and comparing results against objectives or benchmarks.

**Set Goals and Objectives.** Goals and objectives form the foundation for measuring progress. Goals should build on the mission of the organization, and it is important to identify the various goals for a program and potential tradeoffs among goals. Developing SMART objectives (Specific, Measurable, Achievable, Realistic and Time-framed) can help in tracking success. SMART objectives help the agency track progress toward established goals, identify poor results, and recommend improvements.

Some general goals for a transit benefits program might include the following:

- Increasing transit ridership—during peak periods, off-peak periods, or on specific routes;
- Increasing transit agency revenues or revenue per vehicle operating hour;
- Reducing employee parking demand;
- Reducing vehicle travel and emissions; and
- Improving public perceptions of transit.

Transit agencies and other public sector partners should be aware that they may have different goals for the program.

**Keep Expectations Realistic.** Transit agencies and other organizations need to have realistic expectations for what their transit benefits program can accomplish. For instance, while a transit benefits program can increase transit ridership, many factors influence how successful the program may be at a given location. Developing a baseline and/or benchmarks is therefore important in setting objectives.

**Let Goals and Objectives Guide Program Design.** Certain types of program design elements are better able to meet certain goals, and there may be tradeoffs between goals. This section contains brief descriptions and examples of various transit benefits program designs and pricing options: monthly passes (regular, standard discounts, and tiered discounts); universal passes; modified universal passes; pay-per-ride systems; stored-value cards; stored-value cards with electronic downloading; and vouchers. It also highlights various marketing

approaches that can meet different goals. Transit agencies should examine their goals and objectives in determining which type of program and which activities would best meet their needs.

**Decide How to Define Success.** Chapter 2 discusses five potential elements of success:

- **Awareness.** Do employers and employees know about the program? Employers must be aware of the program in order to implement it, and employees must know that their employer offers it.
- **Participation.** How many employers and employees are signed up for the program? Most transit agencies know how many employers participate, but it is also important to track employee participation.
- **Travel behavior changes.** How have employees changed their travel behavior since the introduction of the program? Various metrics can be used to measure changes in travel behavior, including changes in peak and off-peak transit ridership and changes in drive alone commuting.
- **Transit agency impacts (systemwide ridership, revenues, and costs).** What has been the effect of the program on ridership, revenues, and costs?
- **Regional impacts (vehicle travel and emissions).** Has the program measurably reduced vehicle travel and air pollutant or greenhouse gas emissions?

**Understand How to Design and Administer Surveys.** Surveys are a valuable research tool because they are far simpler than direct observation and can be used to measure attitudes as well as behavior. This guidebook identifies three different types of surveys and their advantages and disadvantages. Surveys of an entire commuting population can measure awareness and use of transit benefits. Surveys of all employees at participating worksites can measure changes in travel behavior and provide information on why some people switch and others do not. Surveys of transit benefits recipients can provide information on whether they have changed travel behavior and how satisfied they are with the program.

Designing and implementing a good survey requires understanding how to achieve a representative sample, minimize nonresponse, and avoid common problems in writing questions.

## RESEARCH ON THE EFFECTIVENESS OF TRANSIT BENEFITS PROGRAMS

Chapter 3 of this report examines the effects of transit benefits programs around the United States. These effects were examined from two perspectives. First, the research team collected and analyzed 21 surveys conducted by transit agencies and other organizations in 12 metropolitan areas, and data sets of employer trip reduction plans from three regions with mandatory commute trip reduction (CTR) programs to determine the effects of introducing a transit benefits program on employee travel behavior at the worksite level and the factors influencing the level of employee response. Second, interviews were conducted at seven transit agencies (which were diverse in terms of geography, system attributes, and transit benefits programs) to determine the effects of transit benefits programs on systemwide ridership, revenues, and costs.

### Effects on Travel Behavior

From analyses of the data collected, the overall findings are that transit benefits programs do the following:

- **Generally increase transit ridership, but not in all cases.** At an aggregate level, nearly all of the surveys found increases in transit use when transit benefits were implemented. The results vary widely, from cases with very minor increases to cases in which

transit ridership more than doubled. In some circumstances, however, no increases in transit use were found, suggesting that the programs only served existing transit riders. There was a wide range of effects reported among individual worksites, which may reflect a variety of factors. In general, the surveys conducted by transit agencies and other organizations found notable increases in transit use, whereas the worksites in mandatory CTR areas found that effects ranged from decreases in transit use to increases in transit use and that the effects were very small, on average, across all worksites in these areas. These differences may reflect different characteristics of the worksites and programs being examined, as the worksites in the mandatory CTR areas were much more likely to be in suburban areas with low starting transit mode shares, tended to provide a low level of financial support, and may have offered a wider range of other employee commute programs (e.g., rideshare matching and telecommuting). It is also possible that many of those worksites continue to offer free parking, which outweighs transit benefits for many commuters.

- **Attract commuters who drive alone into riding transit.** Most new transit riders switched from driving alone. Typically, the majority of the new transit riders reported that they previously used single-occupant vehicles (SOVs) for commuting, and, in over half the surveys, the figure was over 90 percent. These figures suggest that transit benefits programs can be effective in reducing vehicle travel, parking demands, and emissions.
- **Induce changes in commute and noncommute behavior.** Although transit benefits programs are designed to help employees get to work, surveys in New York and Philadelphia suggest that transit benefits recipients tend to ride transit more often for both work and nonwork trips. An employer-provided transit benefit makes it convenient to ride transit, particularly if the benefit is in the form of a monthly pass or annual pass, which can be used anytime. However, it is not clear whether increased transit use for nonwork trips occurs in smaller transit markets where off-peak-period services tend to be more limited.
- **Differ in effectiveness in changing travel behavior, based on factors including transit availability, level of employer payment, and supporting programs.** Worksite location (i.e., transit availability at the worksite) appears to play an important role in determining the level of increase in transit ridership. Urban locations with relatively high starting transit mode shares tend to see larger increases in the number of transit users (per 100 employees) than suburban areas with lower initial transit mode shares; however, percentage gains in suburban areas are often larger. Areas that have no initial transit users or a very low number of them (less than 5 percent of employees) are the most likely to see no change in transit use; this lack of change in transit use may be due to worksite characteristics that are not very conducive to transit such as limited/infrequent transit services, plentiful free parking, or automobile-oriented land use patterns. Compared with pre-tax transit benefits programs that are paid for by employees, programs that are paid for by employers appear more likely to increase employee use of transit. Finally, implementing a new transit benefits program in conjunction with marketing and supporting services, such as a guaranteed-ride-home program, seems to produce a greater increase in transit ridership than implementing the program alone.

### Effects on Transit Agency Ridership, Revenues, and Costs

Interviews with transit agencies yielded the following conclusions regarding systemwide impacts:

- **Transit benefits programs can make up a substantial portion of systemwide ridership and revenues.** Employer transit benefits programs can make up a substantial portion of total transit agency ridership and revenues. Among the agencies interviewed, employer programs contributed 5 to 25 percent of total transit riders and 5 to 40 percent of customer revenues.

- **Transit benefits programs increase ridership but may be revenue neutral.** Paired with the survey data, the information on transit benefits users suggests that transit benefits programs can increase systemwide ridership. All seven transit agencies interviewed also reported that they believed the programs increased ridership, particularly during peak hours. Not all transit agencies reported increased revenues. Impacts on revenues depend on program design, such as whether discounts are offered to employers. In some cases, the programs are designed to be revenue neutral for the transit agency (e.g., total revenues remain constant even with increased transit ridership because of fare discounts or special pricing arrangements with employers). Universal pass programs (i.e., a program that typically requires the employer to purchase an annual transit pass for all employees), in particular, are often designed to be revenue neutral and are often negotiated with individual employers or offered at preset pricing levels. In these cases, the primary goal is not increasing revenues but attracting new riders, which may help to fill empty seats and reduce the agency's subsidy per rider.
  - **Different program designs (e.g., monthly passes, universal passes, or vouchers) appeal to different types of employers and can also have different implications in terms of revenues, ridership, and program costs.** Many agencies offer multiple types of transit benefits programs to employers, which meet different market demands and have different strengths and weaknesses from the perspective of the transit agency. For example, several transit agencies offer monthly pass programs and universal pass programs to employers. Monthly pass programs tend to attract more employers, but these programs often have a relatively small number of transit riders per employer (50 or less). Universal pass programs, in contrast, tend to attract fewer employers, but the employers attracted to these programs tend to have more employees; these programs also require more staff to administer.
  - **Cost implications of transit benefits programs for transit agencies are not well understood.** Transit agencies were not able to provide very detailed data on the costs of running their employer-based transit benefits programs. Staff time tends to be the largest component of these costs, and staff needs differ by program type. Staffing varies from one full-time equivalent (FTE) to almost seven FTEs for the employer programs examined. Transit benefits programs may generate some cost savings for the transit agencies, but these could not be quantified because of the lack of data collected by the transit agencies. Most agencies report that employer programs reduce cash handling to a moderate or high degree, which in turn, should reduce some of the costs associated with individual sales transactions. However, none of the agencies could provide data supporting these conclusions. Several agencies noted that annual pass programs, in particular, are useful in reducing costs because they reduce the number of passes to be printed and distributed per year.
  - **Most transit agencies consider their transit benefits programs successful.** Despite the lack of data on some key performance measures, staff members managing transit benefits programs at five of the seven transit agencies interviewed rated their programs "very successful." Reasons cited include increased revenues and ridership, the ability to build relationships with the business community, mechanisms for rider feedback, improved planning, and customer loyalty. For the two transit agencies that rated their programs as "somewhat" successful or "mixed," reasons included low participation, difficulty recruiting participants, and uncertain revenues.
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## CHAPTER 1

# INTRODUCTION

### OVERVIEW OF THE ISSUE

U.S. tax law allows employers to offer employees tax-free transit and vanpool benefits, referred to as “commuter benefits.” Commuter benefits can be provided in three ways:

- **Employer-paid.** The employer pays directly for the cost of transit passes or vanpool expenses (either a portion of employees’ costs or the full cost);
- **Employee-paid (often called employee pre-tax deductions).** The employer allows employees to pay for transit or vanpool expenses themselves using pre-tax income via payroll deduction; or
- **Combination.** The employer pays part of the benefit and allows employees to pay the remainder on a pre-tax basis.

In all cases, there are tax advantages for the employer and the employee because neither pays federal payroll or income taxes on the benefit. For employees, all three options reduce the cost of commuting by transit or vanpools and, as a result, create an incentive to switch to use of these modes. For more information see *TCRP Report 87: Strategies for Increasing the Effectiveness of Commuter Benefits Programs (I)*.

Although the cost savings are relatively straightforward, the impacts on employee travel behavior are not as well understood, and little rigorous research has been conducted on the topic on a national scale. Although it makes intuitive sense that commuter benefits programs would increase transit and vanpool use, it is possible that these programs primarily support existing transit and vanpool riders. Many of the advantages of commuter benefits programs are contingent on the extent to which these programs result in changes in travel behavior. Commuter benefits programs may offer the following advantages:

- The potential for employers to reduce parking costs, but these cost savings depend on the extent to which the program is effective in encouraging employees to switch from driving to use of transit or vanpools.
- The potential for transit agencies to increase ridership and revenues; however, these increases depend on the extent to which the programs actually encourage additional transit use, as well as the fare structure (e.g., discounts) that is established for the commuter benefits program. Commuter benefits programs may also offer potential cost

savings associated with the efficiencies of bulk sales compared with individual fare transactions, and these savings will depend in part on the number of employees and employers participating. Revenue and cost implications may also depend on the extent to which the programs increase peak or off-peak ridership.

- The potential for reduced traffic congestion, improved air quality, reduced fuel consumption, and fewer greenhouse gas emissions. All of these impacts, in turn, depend on shifts from driving to transit or vanpools.

Although there are many potential advantages associated with commuter benefits programs, more information is needed to help agencies involved in administering and marketing these programs to better understand the effects that can be expected from a program and the circumstances under which programs are most likely to be successful. Agencies that manage and market these programs also need better information and tools to help them set reasonable objectives for their programs and track effectiveness.

### STUDY OBJECTIVE AND REPORT ORGANIZATION

The objective of this study is to identify the advantages and costs of commuter benefits programs and to help transit agencies, commuter organizations, and other agencies identify and collect the information they need to assess the effectiveness of their program efforts. Although the concepts in this report are applicable to all commuter benefits programs, given limited data, the focus of this report is on *transit benefits programs*. Although the study set out to focus on commuter benefits programs, defined broadly to include transit, vanpool, and other financial benefits, most of the information collected pertains to transit benefits programs. This is not surprising because transit agencies are largely responsible for administering commuter benefits programs (although third-party benefits administrators and others are also involved). Much of the data available on these programs have been collected by transit agencies and focus on the impacts of transit benefits programs on transit ridership.

The report should help employers, agencies that promote transit benefits, and policy makers better understand what effects they might expect from a transit benefits program and



how to quantify these effects. Chapter 2: Evaluating the Effectiveness of Transit Benefits Programs is designed to provide information to transit agencies, commuter organizations, and other agencies that promote transit benefits programs on how to assess the effectiveness of their program efforts. It includes information on setting goals and objectives for a program, types of effects that can be measured, and tools and approaches for measuring these effects. Chapter 3: Understanding the Impacts of Transit Benefits Programs explores the impacts of transit benefits programs, based on data from some U.S. transit benefits programs. Chapter 3 examines two types of impacts:

- **Impacts on travel behavior.** The report examines the extent to which transit benefits programs produce changes in employee travel behavior (i.e., increased transit use and reduced vehicle travel) and examines what factors are most influential in determining these impacts. Understanding the travel impacts of transit benefits programs is key to quantifying a wide range of effects asso-

ciated with these programs, including the potential for employer parking cost savings, employee commute cost savings, increases in transit ridership, and reduced air pollution and greenhouse gas emissions. Quantifying these effects is often vital to marketing these programs to employers and for securing funding and public support. This chapter highlights the range of effects found in different regions and at different worksites and factors that appear to play an important role in determining effects on travel behavior.

- **Impacts on transit agencies.** The report also examines the extent to which transit benefits programs affect transit agencies' systemwide ridership, revenues, and costs. Potential advantages to transit agencies may come in many forms, including retention of existing riders, attraction of new riders, increased efficiency of fare media distribution, increased efficiency of fare collection, and increased support from the business community and general public. Tracking these effects will help transit agencies to improve their programs.
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## CHAPTER 2

# EVALUATING THE EFFECTIVENESS OF TRANSIT BENEFITS PROGRAMS

Chapter 2 of this report serves as a guidebook on developing, implementing, and measuring the success of employer-based transit benefits programs. It is designed for transit agencies, commuter organizations, employers, and other stakeholders and is divided into the following four sections:

- **Strategic Planning and Program Evaluation**—This section discusses strategic planning for a transit benefits program at a broad level. It identifies important considerations for setting goals and objectives and describes how program evaluation relates to the planning process.
  - **Setting Realistic Expectations**—This section provides information to help set realistic expectations for program impacts and highlights factors that affect impacts, based on the research conducted for Chapter 3 of this report.
  - **Implementing a Transit Benefits Program to Meet Strategic Goals and Objectives**—This section highlights how program design can influence the ability to meet strategic goals and objectives. It provides information on the pros and cons of different types of fare media, pricing policies, and marketing approaches, from the perspective of meeting diverse goals and objectives.
  - **Defining and Measuring Success**—This section describes several different measures of success for a program and how to go about conducting an evaluation.
- **To secure funding.** In some cases, evaluations are required in order to secure funding from specific funding sources. For instance, some metropolitan areas use federal Congestion Mitigation and Air Quality Improvement (CMAQ) Program money to fund transit benefits outreach efforts, and the CMAQ Program requires a quantitative evaluation of the air quality impacts of programs to the extent feasible. Some transportation management associations also are required to document the effects of their programs on reducing traffic and emissions.
  - **To meet requirements.** Some metropolitan areas provide financial incentives to employers who offer transit benefits and have incorporated those incentives into their air quality plans as official transportation control measures (TCMs). In these cases, it may be important to document the effects at reducing air pollutant emissions in order to meet transportation conformity requirements.
  - **To determine how to improve.** Program evaluations can also provide valuable information on successful and unsuccessful activities. This information, in turn, can be used to adapt the program to make it more effective.

## STRATEGIC PLANNING AND PROGRAM EVALUATION

### Why Evaluate Programs?

Evaluating the impacts of a transit benefits program can be important for many reasons, including the following:

- **To justify programs.** Evaluation can help transit agencies, employers, and other stakeholders (e.g., commuter organizations, transportation management associations, metropolitan planning organizations, and local governments) to justify their investments in transit benefits programs. Transit agencies and other public entities want to identify whether the program is achieving desired results; employers, similarly, often want to see to what extent their programs are reducing parking demands or achieving other goals.

### Relationship Between Planning and Evaluation

Program planning and implementation should ideally form an interlocking cycle with evaluation and measurement, as illustrated in Figure 1. Evaluation cannot happen simply after a program has been implemented.

Various aspects of evaluation occur throughout the program planning life cycle. For instance, *specifying* what data are to be collected, and how, will depend on the goals and objectives that are set during program *planning* (either on an annual or other periodic basis). Therefore, a critical component of program evaluation occurs in first setting appropriate goals and objectives for the program. *Measuring* program impacts typically involves collecting information as part of the *implementation* of the program. *Comparing* results against a baseline or objectives establishes whether the program has been successful and where improvements may need to be made. This information, in turn, can help in *deciding* whether to refine, adapt, or discontinue the existing program.

Program evaluation helps the planner to systematically ask questions that are integral to the planning process, such as

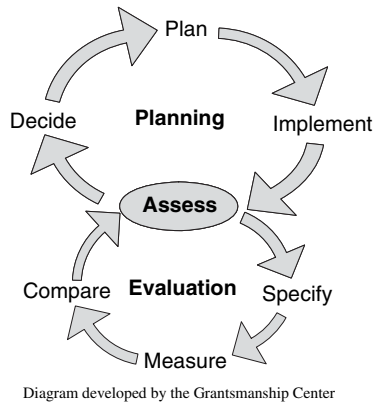


Figure 1. Planning and evaluation cycle.

what the program ought to achieve, how it will be measured, and how systems will be set up for measuring impacts.

### Establishing Goals

The goals for a transit benefits program should build on the mission of the organization conducting the evaluation. Although evaluation of a transit benefits program may be conducted by a transit agency, there may also be other stakeholders who want to measure the program's effects, including employers, local governments, and metropolitan planning organizations. Goals may differ for different organizations that are involved in developing and promoting transit benefits, and it will be important to determine what goals are shared and what goals are specific to individual organizations.

For instance, a transit agency and a commuter organization (e.g., a metropolitan planning organization, transportation management association, or local government) may share the goal of increasing transit ridership. The transit agency may also have maintenance or growth in agency revenues as a primary goal, whereas the commuter organization may have traffic reduction as a primary goal. Although these goals are not in conflict, they may imply different program strategies. For example, the transit agency may not want to offer a discounted pass program because this could adversely affect revenues; however, the commuter organization may wish to offer employers a start-up financial incentive in order to attract additional employers to sign up for the program.

Some examples of transit benefits program goals include the following:

- Increasing transit ridership (peak and/or off-peak period),
- Increasing transit agency revenues or revenue per vehicle operating hour,
- Increasing reliability of stream of revenues,
- Reducing vehicle travel and emissions, and
- Improving public perceptions of transit.

It is important that the goal not be simply, "to develop a transit benefits program." The organization should have broader goals that a transit benefits program can help achieve.

The goals for an employer-based transit benefits program should fit in with existing organizational goals, and implementing organizations (such as a transit agency, a commuter organization, or an employer) should decide early on how much emphasis to give the transit benefits program vis-à-vis its other programs. For example, if awareness of the transit agency's services is generally low and one overarching goal for the agency is to increase public awareness, the goals for the transit benefits program can be tied to the larger agency goals. In this case, the rollout of an employer-based transit benefits program could be integrated with a larger overall marketing campaign. If the transit agency is changing its fare structure and the agency is concerned about losing ridership, the pricing of a transit benefits program could be tied in to help retain riders by providing discounts for participating employers. The better integrated the transit benefits program is with the overall transit agency goals, the more successful it will likely be.

Similarly, other stakeholders should determine how their goals for the transit benefits program relate to broader organizational goals. For example, a commuter organization should determine how a transit benefits program fits in with broader transportation demand management (TDM) outreach efforts and employer marketing focused on reducing vehicle travel.

### Developing Objectives

Objectives should build off goals and provide details that help in tracking success. Objectives should have "SMART" characteristics, as defined below:

**S**pecific: Provide enough detail to say exactly what you want to do.

**M**easurable: Include quantitative measurements, saying how many or how much should be accomplished.

**A**chievable: Consider whether the objective can be accomplished in a relative sense, given funding and time constraints.

**R**ealistic: Consider whether the objective can be accomplished in an absolute sense (e.g., "increase participation by 10 percent," not "increase participation by 1,000 percent").

**T**ime Sensitive: Identify a time frame within which the objective will be achieved (e.g., "by September 30," or "within one year").

SMART objectives help an organization to identify whether it is moving toward established goals, as well as to identify poor results and recommend improvements. Figure 2 illustrates a "SMART" objective.

The organization should develop objectives by first identifying the basic needs that a transit benefits program is intended to fill and selecting relevant performance measures. Although

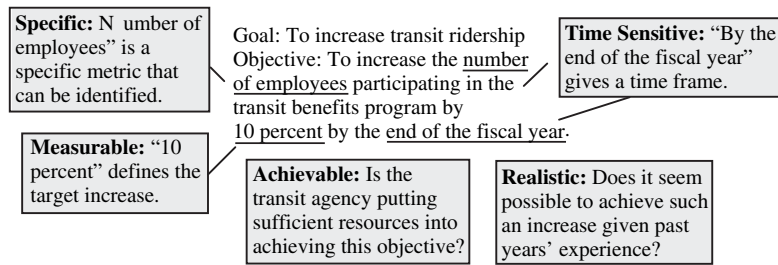


Figure 2. Anatomy of a SMART objective.

any transit agency will likely have the broad goal of increasing or maintaining ridership and revenues, there may be a wide range of objectives that help to support this goal. For example, objectives could relate to increasing employer participation or employee participation, involve various time periods (e.g., each quarter, by the end of the fiscal year, or over a three-year planning cycle), or focus on specific locations.

## SETTING REALISTIC EXPECTATIONS

Transit agencies, commuter organizations, employers, and other stakeholders need to have a realistic understanding of the potential impacts of transit benefits programs in order to set appropriate goals and objectives. Consequently, it is important to understand the current status of the program (a "baseline") and what might be possible to achieve given conditions and constraints associated with the program (e.g., specific regional issues or budget constraints).

### Developing a Baseline

Developing baseline information is an important component of planning and program evaluation. First, information needs to be compiled to characterize the current situation. This requires collecting data to answer questions such as the following:

- How many employers do we have currently enrolled?
- How many employees currently participate in the program?
- How much revenue do we currently take in from the program?
- How satisfied are employers with how the program operates?
- How have these metrics changed over time (what are the trends)?

Establishing a baseline shows where the program has been and, therefore, can help in setting realistic expectations and objectives for the program in the future. Baseline information could include information on the status quo and/or on the program's past. Baseline information also can be used to track progress against a recognized starting point when the evaluation is conducted.

## Understanding Program Context and Factors That Influence Effectiveness

In addition to developing a baseline, it is important to collect information regarding the context in which the program operates and the factors that relate to program effectiveness. For instance, in setting objectives for a transit benefits program, it is usually important to have some basic information about factors such as the following:

- What is the current average transit mode share in the metropolitan area/transit service area?
- How many employers are located in the transit service area?
- How many employees work within a quarter of a mile of a transit station?
- How many daily transit riders are there?
- What transit services have excess capacity during peak hours?
- What is the general level of awareness of transit services (e.g., bus and rail)?

Having this type of information will help an organization understand the potential market for the transit benefits program and the extent to which such a program might be able to contribute to goals such as increased ridership.

In addition, transit agencies and others involved in a transit benefits program need to understand what factors make a program most successful so that resources can be targeted appropriately, and programs can be designed and developed to achieve those goals. One key finding from Chapter 3 of this report is that transit benefits programs can increase transit ridership and reduce SOV use, but a wide range of travel impacts are possible, ranging from no impact on transit use to very significant increases in transit use. There is no one simple rule of thumb to estimate what, if any, increase in transit use and reduction in vehicle travel will occur as the result of a transit benefits program. As a result, it is important to have as a starting point a general understanding of the level of effect that might be achievable for a transit benefits program given different circumstances. Figure 3 serves as a guide to the factors that tend to contribute to greater increases in transit ridership.

Each factor in Figure 3 contributes to determining what impact might be expected for an individual worksite or region.

<b>Worksite Location</b>	Automobile-oriented suburb	Small urbanized center / Urban fringe	Central business district
<b>Frequency of Transit Services</b>	Very limited or no service	Moderate service level	Extensive, high frequency services
<b>Type of Transit Benefit</b>	Employee-paid pre-tax only	Employer subsidized	Fully employer paid
<b>Other Worksite Programs</b>	Many competing programs (e.g., rideshare matching and telework)		Transit-supportive programs (e.g., guaranteed-ride and home transit marketing)
<b>Worksite Parking</b>	Free, plentiful parking	Employer-paid parking	Expensive, limited parking
<b>Existing Transit Users</b>	Virtually none or nearly all		Some existing users
<b>Change in Transit Ridership</b>			
	No Change	Moderate Increase	Large Increase

Figure 3. Factors that affect transit ridership levels with implementation of a transit benefits program.

For example, all else being equal, one would expect that an employer that offers fully-paid transit benefits would see a larger increase in transit use than one that offers only an employee-paid, pre-tax benefit. An employer located in an area with very limited transit services would expect to see less of an increase (or no increase) in transit riders as the result of a transit benefits program compared with an employer in a location served by many transit lines and frequent service.

The number of transit users at a worksite prior to implementing a transit benefit also plays a role. If the share of employees using transit is already very high (perhaps because of other conditions favorable to transit use such as availability of supporting programs, employee-paid parking, and frequent transit services), a large increase in transit use is unlikely, simply because there are very few employees who can switch. For example, in a small company of 20 people, if 18 already use transit, then the maximum potential increase in transit use is 2 employees. Understanding these factors is important in developing realistic expectations for transit ridership growth and reductions in vehicle travel.

## IMPLEMENTING A TRANSIT BENEFITS PROGRAM TO MEET STRATEGIC GOALS AND OBJECTIVES

### How Goals and Objectives Can Shape Program Design

Goals and objectives can help determine the strategies used in developing, implementing, modifying, and marketing a transit benefits program. There are various ways that transit agencies can set up transit benefits programs for employers

and employees, and different program options can meet different goals. It is therefore important to ask these two questions first: What are the *primary goals* for the transit benefits program? What are the *tradeoffs* among different goals? A program may have several different goals, and it will be important to recognize potential tradeoffs in meeting each goal and to set priorities among goals to ensure that the primary goals of the program are being met.

Several different types of program decisions must then be made that relate to program goals. These include deciding the following:

- **What type of program should be implemented?** A wide range of different transit benefits program designs can be implemented (e.g., monthly passes, universal passes, stored-value cards, and vouchers), each of which have different characteristics and effects.
- **What type of incentives should be offered?** Program goals and objectives will also influence pricing policies, such as whether to offer discounts. For instance, if a key goal is to increase transit agency revenues, it is probably better to have a nondiscounted program. However, if a key goal is to increase ridership, it may be useful to set up a program that offers larger discounts with greater levels of employee participation.
- **What kind of marketing should be used to promote the program?** Program goals and objectives will influence what type of marketing is conducted and how it is targeted. For example, if the goal is to build relationships with the business community, the transit agency might pursue a strategy of working through organizations such as chambers of commerce or industry groups to make



contacts with major employers. On the other hand, if the goal is to retain existing riders, the transit agency might do most of its marketing through in-vehicle advertising and a “push-pull” strategy in which current riders create demand by asking their employers about providing transit benefits.

Exhibit 1 displays several goals that transit agencies, commuter organizations, and other stakeholders may have for a transit benefits program and provides examples of program designs that may help programs meet these goals.

### Role of Transit Benefits Program Type and Pricing

Section 132(f) of the Internal Revenue Code, which addresses employer-provided commuter benefits (i.e., qualified transportation fringe benefits) defines “transit passes” as including “any pass, token, farecard, voucher, or similar item” (2). (The pertinent IRS regulations became effective in January 2004. Full text of these regulations is available in

#### Tradeoffs with Employer Discounts: Ridership versus Revenues

Although discounts may be a good way to encourage greater employer adoption of transit benefits programs, they may also mean that ridership increases without a corresponding increase in revenues. The cost-effectiveness of this approach depends on the agency’s situation, particularly in regard to current utilization of services.

If there is excess capacity on transit services, increasing ridership without increasing revenues can be positive. Even though such an approach may mean less revenue per rider, filling empty seats will result in a lower subsidy per rider because the costs of operating service are spread among more riders. Because subsidy per rider (or alternatively, fare-box recovery ratio) is often viewed as a key metric for transit agencies, increasing ridership while remaining revenue neutral can be viewed as a success for a transit benefits program. Increasing ridership also helps show that the transit agency is meeting broader goals of reducing traffic and air pollution and can generate more support for transit agency budgets and potential expansion of services from political decision makers who see transit operating at capacity rather than empty buses and trains.

On the other hand, if there is limited or no excess capacity during peak hours, transit agencies will likely want to bring in new revenues with new riders in order for the program to be considered successful. Most ridership impacts associated with transit benefits occur during peak hours, when services may be at or near capacity. If a transit benefits program leads to increased crowding or the need for new transit services that increase operating costs without corresponding revenues, the program is probably not helping the agency to meet its goals.

Appendix A of *TCRP Report 87* [1].) Under the tax code, an employer that offers a transit benefit to employees in an area where a transit agency or other organization offers a “readily available” pass is obliged to participate in the pass program. (See *TCRP Report 87* [1] for specific information on the definition of “readily available.”) Only if an employer is located in an area without any pass program can the employer set up a transit benefits program for their employees using cash reimbursement (paying employees for the costs of the transit fare media they purchase themselves).

A wide variety of programs fit the broad description of a transit pass program. Each type of program differs in terms of potential effects on transit ridership, revenues, and agency costs of administering the program. There are also differences in the advantages of different programs to different types of employers.

Exhibits 2 through 8 contain summaries of seven types of transit pass programs that differ from each other on the basis of the functional attributes of the pass and the structure of payment. These pass programs are the following:

- Monthly pass,
- Universal pass,
- “Modified” universal pass (no universal purchase requirements),
- Pay-per-ride card,
- Stored-value card,
- Stored-value card with e-benefits, and
- Voucher.

The summaries describe each type of transit pass program, highlight some of the advantages and disadvantages, and provide examples. It is important to note that more than one program type may be applicable to an individual agency/region, and some transit agencies have developed variations on these basic types. In some cases, one type of pass may function in two or more different ways (e.g., Washington Metropolitan Area Transit Authority’s [WMATA’s] Metrochek functions as a stored-value card and as a voucher that can be traded in toward services on suburban bus providers and vanpools).

### Considerations in Developing a Transit Benefits Program

The type of transit benefits program to implement should reflect the goals and objectives of the transit benefits program. In considering what types of programs to implement and how, it is useful to consider answers to baseline and program design questions.

#### Baseline Questions

First, it is important to consider how the transit benefits program fits into the existing programs of the transit agency. Agencies should consider the following questions:

**EXHIBIT 1. Transit benefits program goals and designing programs to meet them**

<b>Goal</b>	<b>Recommendations for Program Design</b>
Maintain transit ridership (given fare hikes, etc.)	Focus on efforts to sign up companies that have a large number of existing transit users. Promote employee-paid, pre-tax transit option, which may be an easier “sell” to employers. Use in-vehicle advertising.
Increase transit ridership	Focus on efforts to attract new employers into the program and increase transit ridership at those worksites. These efforts may include the following: <ul style="list-style-type: none"> <li>• Consider implementing a combination of monthly passes and universal passes to fit different types of employer needs and provide unlimited access to transit services.</li> <li>• Include incentives for employer adoption, particularly for large employers or those that show increased transit use.</li> <li>• Promote employer-paid benefits, because these tend to be more effective in encouraging increased transit use. Invest heavily in outreach and tying programs to supporting demand management efforts, like a regional Guaranteed-Ride-Home program.</li> </ul>
Increase transit agency revenues	Focus on program designs that bring in additional revenue with each additional trip such as the following: <ul style="list-style-type: none"> <li>• Implementing pay-per-ride systems or monthly passes.</li> <li>• Avoiding incentives that lower revenues.</li> </ul>
Reduce vehicle miles of travel (VMT)	Build on efforts to increase transit ridership, focusing in particular on longer trip distances or heavily congested travel corridors.
Reduce air-pollutant emissions	Build on efforts to increase transit ridership, focus on reducing vehicle trip-making (to avoid vehicle “cold start” emissions, which occur when a vehicle is not yet warmed up and emissions control equipment is not as effective). Promote transit benefits programs in locations where people can walk or bike to the transit stop, rather than driving to a park-and-ride lot or transit station.

- **Is there more than one transit provider in the region?** If there is more than one transit provider in the region, the transit agency may want to consider a voucher system, a smart card, or system that allows monthly passes to be used for multiple providers. These systems will allow employers to deal with only one transit benefits provider and thereby broaden the appeal of the program. If there is only one transit provider in the region, standard pass programs may be the simplest option (although the systems listed above would still work).
- **What are the agency’s current fare structure and fare media?** The current fare structure should help to determine the structure of the employer program. If the current fare structure allows for monthly or annual passes, it may be easiest to set up a monthly or universal pass program

for employers. If a stored-value card is already in place, a system can be worked out to allow employers to purchase funds to be added to the card—either by prepaying for the card or developing a pay-per-ride structure. In cases where the current fare structure does not include monthly passes, it may be difficult to set pricing for a universal pass. All of the universal pass programs currently in place in the United States are on systems with monthly pass options.

#### *Program Design Questions*

After determining how the transit benefits program fits into the existing programs of the transit agency, it is important to

**EXHIBIT 2. Monthly pass**

<p><b>What it is:</b> A pass that allows the rider unlimited use of the transit system for a fixed period of time (generally a calendar month, but some systems use 2-week or 30-day passes).</p>	
<p><b>What it costs:</b> <b>Regular:</b> Employers purchase passes at same rates available to general public. <b>Discounted:</b> Employer purchasers receive some type of discount. Discounts can be <b>standard</b> (i.e., every employer receives the same discount) or <b>tiered</b> (employer discount depends on some objective criteria, such as number of passes purchased or location).</p>	
<p><b>Pros:</b> Relatively simple to administer; employers purchase passes for participating employees on a monthly basis.</p>	<p><b>Cons:</b> May be difficult to price if transit agency has a distance- or time-based fare structure.  Requires transit agency to distribute passes to employers and employers to distribute them to employees.</p>
<p><b>Examples:</b> <u>Regular/Undiscounted</u> <b>Massachusetts Bay Transportation Authority (MBTA) Corporate Pass Program</b> - MBTA sells 15 types of monthly passes for different modes (rail, commuter rail, and ferry) and zones. Employers purchase them at the same rates as individuals; they can distribute them to employees for free, sell them to employees on a pre-tax basis, or offer employees a discount.  <u>Standard Discount</u> <b>Metro Transit TransitWorks!</b> - TransitWorks! allows employers to purchase 31-day passes at a 10-percent discount (as well as stored-value cards at a 5-percent discount). Employers must agree to pass the savings along to participating employees.  <u>Tiered Discount</u> <b>MARTA Partnership Program</b> - MARTA gives discounts to employers based on the number of passes they purchase. Employers receive no discount for purchasing fewer than 1,000 passes, but they receive up to an 8-percent discount for purchasing over 6,000 passes.</p>	

consider how the program can be designed in order to best achieve goals and objectives. Agencies should consider the following questions:

- **What are the primary goals and objectives for our program?** Table 1 compares nine types of pass programs/pricing arrangements on a variety of characteristics of interest to transit riders, employers, and transit agencies. The table illustrates that no one program type is best in every situation; rather, each program has advantages and disadvantages.
- **Should we consider having multiple programs?** A number of transit agencies operate multiple programs. In some cases, one program grew out of another one; for example, WMATA created an electronic distribution program on top of an existing stored-value card program when the technology became feasible. King County Metro and Metro Transit operate both monthly pass



**EXHIBIT 3. Universal pass****What it is:**

A pass good for unlimited rides on the transit system. Three criteria distinguish a universal pass from a regular pass: First, it is an annual pass; second, an employer is usually required to purchase a pass for every employee; third, the cost per employee is generally deeply discounted from the fare available to the general public (based on the recognition that not every employee will use the pass daily).

The aim of employer-provided universal passes is to give more employees who would not normally opt to ride transit access to a transit pass in order to encourage some of them to switch to transit or at least ride occasionally. Many transit agencies price the passes so that the outcome is revenue-neutral, so that the cost of supplying existing riders with passes is spread throughout the entire pool of potential riders. For example, if an employer has 10 employees who ride transit paying \$500 each annually for a pass, transit agency revenue is \$5,000 per year. If the transit agency allows the employer to purchase an annual pass for all 100 employees at a cost of \$50 each, revenue is the same but because more employees have transit passes, the hope is that ridership will increase. The primary goal is to increase ridership, not necessarily to increase revenue.

**What it costs:**

Discounts can be **tiered** (employer discount depends on some objective criteria, such as number of passes purchased or location) or **customized** (each employer receives a discount calculated specifically for that employer). A customized discount is generally based on a survey of how many employees currently ride transit and priced in order to be revenue neutral for that particular company.

**Pros:**

More appealing to large employers that can provide a benefit to all of their employees at relatively low cost.

Probably increases ridership more than regular passes because passes are purchased for every employee.

**Cons:**

Tend to result in lower revenues *per actual rider* than other types of programs.

Complex to price, especially for customized discounts.

Can be confusing to employers, especially if re-pricing takes place frequently.

Because of complexity, generally requires more transit agency staff to administer.

**Example:**

**Denver EcoPass** - Fares for EcoPasses are based on two factors: the location of the employer and the number of employees. The EcoPass cost ranges from \$31 to \$279 annually per employee. (Regular annual fares range from \$420 to \$1,260.) Employers are subject to a minimum charge (depending on location and number of employees) ranging from \$540 to \$4,860 (2003 fares).

**EXHIBIT 4. Modified universal pass**

<p><b>What it is:</b></p> <p>There are a number of variations on the universal pass that modify the standard concept of the pass. The most notable modification is to structure the program so that the employer can charge employees for the pass, in which case not all employees will choose to get the pass (not the conventional definition of a universal pass). Other modifications include programs for specific institutions (such as universities) that cover both employees and nonemployees.</p>	
<p><b>What it costs:</b></p> <p>Discounts are <b>customized</b> (each employer receives a discount calculated specifically for that employer). A customized discount is generally based on a survey of how many employees currently ride transit and priced to be revenue neutral for the transit agency. Customized universal passes have also been made available in some locations for universities, in which case the passes are used both for employees (faculty and staff) and students and the pricing reflects ridership from both groups.</p>	
<p><b>Pros:</b></p> <p>Has the potential to increase transit ridership without a corresponding increase in employer cost in the short run (allows employers to work up to higher prices, so that the initial “sticker shock” is less).</p> <p>Greater flexibility in pricing can be used to attract employers who might not otherwise have been interested in a universal pass.</p> <p>University pass programs have been extremely successful in increasing ridership and reducing use of private automobiles.</p>	<p><b>Cons:</b></p> <p>If the employer requires employees to pay for the pass, many employees will not sign up for the program, so it is not truly “universal.”</p> <p>Complex to price, especially for customized discounts.</p> <p>Can be confusing to employers, especially if re-pricing takes place frequently.</p> <p>Because of complexity, generally requires more transit agency staff to administer.</p>
<p><b>Examples:</b></p> <p><b>Metro Transit Metropass</b> - Pricing is based on a 5-year period. For the first year, the employer surveys all employees to determine the number currently riding transit. The employer then purchases an annual pass for all of those riders at a rate of \$63 per employee, per month. However, if more employees elect to ride transit during the year, those passes are provided at no additional cost to the employer. After 2 years, the employees are surveyed again, and the annual cost is recalculated based on the new number of transit riders. Any increase is phased in over the next 3 years. The employer can charge employees for the pass, passing on some of the discount to the employees who sign up.</p> <p><b>King County UPass</b> - This program is set up specifically for faculty, staff, and students at the University of Washington. The pass cost is approximately \$70 per quarter, per student, and \$100 per quarter, per faculty/staff. Students, faculty, and staff can opt out of purchasing a pass.</p>	

programs and universal pass programs, which are seen as complementary.

- **Pro.** The main benefit to having more than one program is that the programs can appeal to different employer constituencies. Universal pass programs work better with large employers, whereas monthly

pass programs seem to work with small employers. Given that employer situations vary so drastically, a “one-size-fits-all” approach may not prove successful.

- **Con.** The downside is that more staff members are required to administer multiple programs. The existence of multiple programs with different rules may

**EXHIBIT 5. Pay-per-ride card**

<p><b>What it is:</b></p> <p>A pay-per-ride system allows employers to pay for exactly as many transit rides as their employees have taken. Using a semipermanent fare card, the employee swipes the fare gate every time he/she rides transit. The transit agency then calculates for each employee how many rides have been taken and bills the employer accordingly. If the employee takes enough rides that it would have been cheaper to use a monthly pass, the employer pays the monthly pass cost instead.</p>	
<p><b>What it costs:</b></p> <p>The employer pays only for the actual service consumed, whether on an individual-ride basis or a monthly-pass basis. Thus, the price is always cheaper than if the employer purchased a monthly pass for each employee.</p>	
<p><b>Pros:</b></p> <p>Employer pays only for service consumed, making it cheaper than monthly passes and thus more attractive to employers.</p> <p>Presumed to be revenue neutral to transit agency because employees who ride infrequently would probably pay with cash or tokens, and employees who ride frequently would probably purchase monthly passes.</p> <p>Low distribution costs because this option involves a semipermanent fare card.</p>	<p><b>Cons:</b></p> <p>Requires post-use billing, whereas most transit benefits programs receive revenues before service is provided.</p> <p>Unlike pass programs, revenues depend on usage, so revenues may fluctuate.</p>
<p><b>Example:</b></p> <p><b>Valley Metro Bus Card Plus</b> - Employers pay only for service consumed, at either \$1.25 per ride or \$34 per monthly pass. The card lasts about 2 years and costs the employer \$0.50 per employee. Staff members describe the program as a “credit card for the bus.”</p> <p><b>BruinGO Program for UCLA</b> – This university pass program for the University of California, Los Angeles, allows students and staff to swipe their university ID cards on Santa Monica buses, and UCLA pays the Santa Monica agency for each ride taken.</p>	

prove confusing to employers, employees, and even transit agency staff.

- **Should we provide a discount and, if so, how much?** Employer discounts can be provided regardless of the type of transit benefits program.
  - **Pro.** The greater the discount, the more attractive the program will be to employers and probably to employees.
  - **Con.** It is difficult to predict how many new riders each level of discount will attract, and thus it is virtually impossible to determine if a discount will bring in sufficient new ridership to justify the discount. The

experiences of the transit agencies interviewed have varied so widely that this study cannot predict the impacts of specific policies.

- **Should we require employers to pass any cost savings along to their employees?** Some transit agencies require that employers pass their discounts through to their employees or that the employer pay for some or all of the benefit (i.e., they do not allow employers to sign up if they are planning to institute an employee-paid, pre-tax program only).
  - **Pro.** Evidence presented in this study seems to suggest that employees are more apt to change their travel

**EXHIBIT 6. Stored-value fare card****What it is:**

A stored-value card is a temporary or semipermanent card that can be used multiple times for multiple trips. The card functions like a debit card, drawing down the appropriate fare each time the card is swiped or touched to a fare machine. A *temporary* stored-value card functions like an electronic version of a 10-ride ticket book—the rider can purchase fares for 10 different rides, after which the card is used up. A *semipermanent* card, the more usual meaning of a stored-value card, can be recharged with more money indefinitely.

In a stored value system, the employer purchases a fixed amount of transit service for the employee to spend down, and once it is gone, the employee pays the rest out of his or her own pocket. This means that the costs are predictable for the employer and that the employer pays ahead of time (unlike a pay-per-ride card, for which the employer is billed after use). Some stored value fare cards are “smart cards,” which refers to the ability of the card to automatically calculate transfers or limit fare charges so that the card deducts no more than the cost of a monthly pass over the course of a month.

**What it costs:**

The employer pays a fixed amount for the card. The transit agency can offer **discounts** so that the employer pays less for the card than face value.

**Pros:**

Works well in places with distance-based fares because it can deduct the amount of the fare directly without the agency having to determine a monthly rate.

A semipermanent card can allow employees to register the card, so that value is not lost if card is lost or stolen.

The card can be programmed to operate on multiple transit systems.

**Cons:**

A semipermanent card requires fairly sophisticated technology, including the ability to add more money and fare machines that read the card.

If the card is to be used on more than one system, agreement on the division of fare revenue is required.

**Examples:**

**Metro Transit TransitWorks!** - Under TransitWorks!, employers can purchase 10-ride stored value cards at a 5-percent discount. (The cards already offer slight discounts from the cash fare because the \$10 stored-value card allows \$11 worth of bus rides.) The fare is deducted at the fare machine on the bus. If the rider has \$1 remaining and the fare is \$1.25, he/she can pay the remainder with another card or cash.

**WMATA Metrochek and SmarTrip Card** - The Metrochek, which is issued in five denominations, functions as a stored value debit card. The employee can add value to the Metrochek card at fare machines, or it can be used to add value to a semipermanent stored-value card called a SmarTrip card. The SmarTrip card can store up to \$300 and costs an initial \$5. Employees can register the card and receive a new card with equal value if the card is lost or stolen. It also uses touchless technology, so transit riders can keep the card in a wallet and swipe it over the faregates for entry.

**EXHIBIT 7. Stored-value card with e-benefits**

<p><b>What it is:</b></p> <p>The term E-benefits refers to electronic distribution of benefits. Under such a system, the employer does not have to distribute any type of fare media or voucher to the employees. Rather, the benefit is distributed to the employee electronically through direct downloading onto a stored-value card.</p>	
<p><b>What it costs:</b></p> <p>The employer downloads whatever value it wants (based on employer contribution and/or employee pre-tax contribution) onto the card.</p>	
<p><b>Pros:</b></p> <p>Cuts the cost of distributing paper fare media or vouchers.</p> <p>Works well in places with distance-based fares because it can deduct the amount of the fare directly without the agency having to determine a monthly rate.</p> <p>The card can be programmed to operate on multiple transit systems.</p> <p>A semipermanent card can allow employees to register the card, so that value is not lost if card is lost or stolen.</p>	<p><b>Cons:</b></p> <p>A semipermanent card requires fairly sophisticated technology, including the ability to add more money and fare machines that read the card.</p> <p>If the card is to be used on more than one system, agreement on the division of fare revenue is required.</p>
<p><b>Examples:</b></p> <p><b>WMATA SmartBenefits</b> - This program allows employees to download employer benefits directly onto a SmarTrip card at fare machines. The employee touches the card to the machine and it automatically adds the amount paid by the employer.</p>	

behavior when employers pay for transit benefits; therefore, requiring employers to do so will probably result in increased ridership.

- **Con.** It can be difficult to enforce such restrictions because an employer’s reporting would almost certainly be on the honor system.
- **Should we institute minimum purchases or fees?** This is more a matter of how much administrative time the transit agency is willing to absorb, because any type of program can have minimum purchase requirements or fees.
  - **Pro.** A fee can cover handling costs, such as mailing passes to employers. Without a fee, the transit agency must absorb these costs, and handling very small employers can become prohibitively expensive.
  - **Con.** Fees and minimum purchase requirements make the transit benefits program less appealing and less accessible to some employers, especially small

employers who may not meet the minimum or whose fees constitute a sizable percentage of their overall purchase.

- **Should employers be required to purchase passes for all employees in universal pass programs?** Some programs that operate along some principles of universal pass programs do not require employers to purchase passes for all employees.
  - **Pro.** Purchasing passes for all employees makes increased ridership more likely because if passes are provided to employees they are more likely to start riding.
  - **Con.** Purchase requirements may increase costs for the employer, based on how the passes are priced. Modified universal pass programs that don’t require purchasing passes for every rider usually require employers to survey employees in order to set the price.

**EXHIBIT 8. Voucher**

<p><b>What it is:</b></p> <p>Vouchers are paper “checks” distributed by the transit agency, regional organizations, or third-party providers that allow employees to purchase fare media on a number of transit systems.</p>	
<p><b>What it costs:</b></p> <p>Vouchers can be sold in specific denominations tied to the value of the region’s transit passes. Some areas also print vouchers for any denomination requested by the employer, with some limits.</p>	
<p><b>Pros:</b></p> <p>Vouchers can be dated such that they are valid for many months, allowing employers to purchase large quantities ahead of time.</p> <p>If the voucher denominations can be customized, each employee can receive exactly the right amount for his/her commute.</p> <p>Vouchers are useful when there are multiple transit agencies in an area because employers do not have to purchase transit benefits from multiple providers.</p> <p>Vouchers provide a way to include vanpools in the range of available transportation options for employees.</p>	<p><b>Cons:</b></p> <p>Vouchers add an extra step for employees because they have to purchase fare media themselves.</p> <p>If the employee receives a larger voucher than needed, the remainder cannot be redeemed for cash, meaning that the employer may overpay for transit. (For example, if vouchers are available only in \$20 denominations, and the employee requires \$15, the extra \$5 cannot be recovered by the employer.)</p>
<p><b>Examples:</b></p> <p><b>Chicago RTA TransitCheck</b> - The RTA, a regional funding and planning authority, issues TransitCheck vouchers that can be used on the four area transit providers: Chicago Transit Authority (CTA), Metra commuter rail, Pace suburban bus, and the South Shore Railroad. Employers can purchase vouchers in any denomination between \$10 and \$100. Vouchers are valid for 13 months.</p> <p><b>DVRPC TransitChek</b> - The Delaware Valley Regional Planning Commission (DVRPC, which is the metropolitan planning organization for the Philadelphia region) issues TransitChek vouchers that can be used on most transit providers in the region: SEPTA, PATCO, NJ Transit, DART First State, Capital Area Transit, and Amtrak (monthly commuter tickets only), as well as for some vanpool providers. TransitCheks are issued in denominations of \$15, \$20, \$30, \$35, \$60, and \$65 and are valid for 13 months.</p> <p><b>King County Commuter Bonus Voucher</b> - Commuter bonus vouchers are valid on any transit or vanpool service in the Seattle region. Employers can purchase vouchers in any whole-dollar denomination from \$5 to \$250. Vouchers are valid for 13 months.</p>	

**Considerations in Marketing a Transit Benefits Program**

Separate from the issue of how to structure the transit benefits program is how to most effectively market the program to achieve its goals and objectives. *TCRP Report 87: Strategies for Increasing the Effectiveness of Commuter Benefits*

*Programs (I)*, provides a more lengthy discussion of a wide variety of successful marketing approaches. Two approaches (based on the research presented in Chapter 3 of this report) that should be considered are supporting employers in paying for transit benefits and recognizing how serving existing transit users can support goals.

**TABLE 1 Advantages of various types of pass programs and pricing arrangements**

	<i>Individual Sales</i>	Monthly Pass – Nondiscounted	Monthly Pass – Standard Discount	Monthly Pass – Tiered Discount	Universal Pass – Traditional	Universal Pass – Not Required for All	Pay-per-Ride	Stored-Value Card/Smart Card	E-benefits	Voucher
<b>Advantages to Transit Riders</b>										
Customer avoids ticket window line	○	●	●	●	●	●	●	●	●	○
Validity over 1 month	●	○	○	○	●	●	●	●	●	●
Provides unlimited rides	●	●	●	●	●	●	●	●	●	●
Can combine multiple transit providers	○	●	●	●	●	●	●	●	●	●
Also usable for vanpool costs	●	○	○	○	○	○	○	○	○	●
<b>Advantages to Employers</b>										
Lower price than employees would pay	NA	○	●	●	●	●	●	●	●	○
Consistent cost	NA	●	●	●	●	●	○	●	●	●
Easy to understand	NA	●	●	●	●	●	●	●	●	●
Easy to distribute benefits to employees	NA	●	●	●	●	●	●	●	●	●
If employees use multiple transit providers, simplifies purchase process	NA	○	○	○	○	○	○	●	●	●
<b>Advantages to Transit Agencies</b>										
Reduces costs through bulk sales	○	●	●	●	●	●	●	●	●	●
Good potential to increase transit ridership	○	●	●	●	●	●	●	●	●	●
Good potential to increase revenues	○	●	●	●	○	○	●	●	●	●
Increases reliability of revenue stream	○	●	●	●	●	●	●	●	●	●
Greater appeal to large businesses	○	●	●	●	●	●	●	●	●	●
Greater appeal to small businesses	○	●	●	●	●	●	●	●	●	●
Minimizes staff costs	○	●	●	●	●	●	●	●	●	●
Reduces cash handling	○	●	●	●	●	●	●	●	●	●
Provides detailed sales/ridership data	○	●	●	●	●	●	●	●	●	●
Key: ● = yes, ● = maybe/sometimes/partially, ○ = no, NA = not applicable										

*Support Employers in Paying for Transit Benefits*

Because employer-paid programs tend to increase ridership more than employee-paid programs, encouraging employers to pay for transit benefits is most likely to help programs meet the goals of increasing transit ridership, reducing vehicle travel, and reducing emissions. However, because employers are reluctant to fund a benefit that employees generally pay for themselves, one solution is for the public sector to help employers fund the benefit initially, in the hope that employers will retain the benefit after the public subsidy ends. This kind of program may be a good compromise if an agency is concerned about revenue impacts of broad-based discounts. Findings from the agency interviews suggest that employers tend to retain transit benefits even in the face of economic downturns. Start-up financial support could be an effective way for the public sector to encourage employers

to take an action they would not have taken on their own. Some jurisdictions have already adopted this approach; King County, for example, provides employer incentives in the first several years.

*Recognize How Serving Existing Transit Users Can Support Goals*

Employee-paid, pre-tax benefits may also be an important part of marketing the transit benefits program. It may be easier to convince employers to implement employee-paid, pre-tax programs than it would be to convince them to implement employer-paid benefits. The pre-tax programs appear to increase transit ridership to a small degree, either through new riders or increased frequency of use by existing riders. Moreover, even if a pre-tax program does not increase total transit



ridership, this type of program will still expand the base of employees using transit benefits, which can be beneficial to transit agencies. For instance, if a large number of users participate through employer programs, the programs offer the potential for reduced individual fare transaction costs and cash handling for transit agencies. They also may provide a more consistent stream of revenue to the transit agency.

Transit benefits programs may help to maintain existing riders in the face of fare increases because the programs reduce the costs of riding transit by making it easy for employees to pick up fare media from their employers. In addition, not all transit agencies want to encourage increased peak-period ridership if services are already operating at capacity and budgets to expand services are limited. Transit benefits programs may encourage existing transit commuters to increase transit use during off-peak periods, particularly with a monthly pass or annual pass program, because the additional transit trips can be made at no cost to the rider. Increasing off-peak ridership is often an important goal for transit agencies with excess system capacity.

## DEFINING AND MEASURING SUCCESS

Determining whether a program is successful at meeting its goals and objectives requires that the objectives be specific enough to measure. That specificity in turn determines the types of data needed to measure it.

### Measures of Effectiveness

The first step in measuring effectiveness is to determine what measures are important and the types of data required. For example, if a program objective is to increase the number of employers enrolled by 10 percent per year, then there must be some way of knowing how many employers are enrolled. If the objective is to increase ridership by 5 percent, then it is essential to be able to estimate ridership.

Several types of effectiveness measures are worth noting as part of an evaluation:

- **Activity or output indicators** focus on the activities and processes associated with a program. Examples of activity-oriented measures include the number of marketing calls made to employers, the number of employer workshops held, the time it takes to process transit pass orders, and the amount of media time given to the program. These measures do not focus on end results, but they can be important to track because they focus on tactics and strategies that are usually part of a plan to achieve program objectives. Consequently, setting targets for activities and outputs is often important as a means to achieving desired outcomes.
- **Outcome indicators** focus on the results of program activities and are closely tied to the goals and objectives

of a program. Examples of outcome indicators include the number of employers participating in the transit benefits program, the number of employees participating, the level of increase in transit ridership, and emissions reductions.

- **Cost-effectiveness indicators** focus on comparing a program's outputs or outcomes with the costs of outcome production. Cost-effectiveness analysis assesses the costs of meeting a goal or objective and can be used to identify the least costly option for meeting a goal.

This section focuses on use of measurable outcomes to determine success in meeting goals. It is organized around five outcomes listed in order of increasing complexity:

1. Awareness,
2. Participation,
3. Travel behavior changes,
4. Transit agency impacts (ridership, revenues, and costs), and
5. Regional impacts (vehicle travel and emissions).

As Figure 4 shows, measuring the more complex outcomes, like transit agency impacts, depends on data collected to measure less complex outcomes, such as participation in a transit benefits program.

### Awareness

The first step in convincing employers and employees to implement and use a transit benefits program is to ensure that

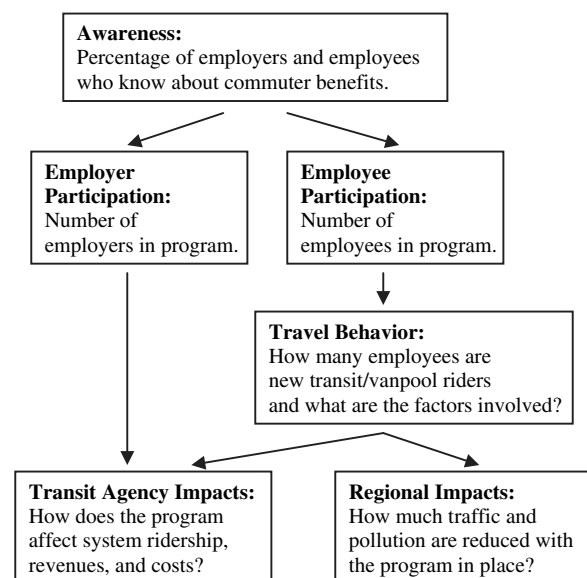


Figure 4. Measuring awareness, participation, travel behavior, and transit agency and regional impacts of employer transit benefits programs.

they know that the program exists and how it works. There is a continuum of awareness ranging from people who have never heard of transit benefits to those who actively use them. Understanding the awareness levels of employers and employees can help a transit agency (and other stakeholders, like commuter organizations and transportation management associations) design strategies to reach them. Clearly, if employers are not aware of transit benefits programs, or if employees are not aware whether or not their employer offers one, this will greatly limit the potential for increasing transit ridership.

Both employer awareness and employee awareness can be measured. Employer awareness can be gauged through surveys of businesses. Questions to answer may include the following:

- What percentage of employers has heard of the transit benefits program?
- What percentage knows how it works?
- How many have looked at a web page with information on the program or seen a program brochure or presentation?

Employee awareness of transit benefits programs is also important because employees are often influential in convincing their employers to implement a program. Moreover, the fact that an employer participates in a transit benefits program does not necessarily mean that employees will be aware of the benefit. Some employers may do little or nothing to market a transit benefits program to their employees; they consider their job finished once the program is implemented. Employee awareness is most commonly measured as part of a regional commuter survey; however, it also could be assessed for individual worksites that have implemented a program. Questions to answer might include the following:

- What percentage of commuters has heard of the transit benefits program (use the name of the local program, like Metrochek, Eco Pass, CommuterCheck)?
- What percentage of commuters knows that the program can save them money?

Surveys in several locations across the country have found that employees may be less aware of programs than one might expect. For example, a general commuter survey conducted in the New York metropolitan area in 2004 that asked whether employees knew if their employers offered transit benefits or other transportation benefits found that just over half of all respondents were “not aware of” any programs to help with commuting costs (3). In other words, they could not answer definitely whether their employer offered such a program.

Similarly, a 2002 survey asking Atlanta-area employees whether their employers offered particular transit benefits found that there was a wide range of responses (4). Although the study could not confirm whether employee responses were accurate (because it did not collect information on which

employers had which benefits in place), the wide range of responses suggests that employees do not always know what benefits their employers have in place. If employees at an individual worksite were well aware of the transit benefits available, the percentage of employees stating that they had access to a transit benefits program should have been either near zero (because transit benefits were not available) or near 100 (because they were available). Yet at 26 of 62 employers, the percentage of employees stating that they had access to discounted transit passes ranged from 25 to 75 percent. This implies that employees may not have known whether the programs were offered by their employers.

Information from these evaluations may point to the need for greater marketing of a transit benefits program in general, or within specific submarkets; a better “branding” effort to raise the program’s profile; or more individual work with employers participating in the program to raise enrollment at those worksites.

### *Participation*

A basic way to measure program performance is to determine how many participants it has. Participation, like awareness, should be assessed for two groups: employers and employees. Participation is an important factor in meeting a wide range of goals, including increased transit ridership, reduced vehicle travel, and reduced emissions.

**Employer Participation.** For employers, participation is defined as being enrolled in an employer transit benefits program in which the employer purchases passes or vouchers for employees. Most transit agencies know how many employers are signed up for their transit benefits programs and collect this information through the sales tracking process as employers enroll in the program or purchase passes. The number of employers participating is often a good measure of the success of sales efforts, but employer participation may also reflect external factors such as economic conditions in the region.

There are some cases in which a transit agency may not have accurate information on employer participation. For example, if a transportation management association (TMA) purchases passes or vouchers for distribution to their members, it may be difficult to assess employer participation because one TMA member in the program may represent many employer participants. However, because there are usually a limited number of TMAs in a region, the transit agency may be able to obtain employer participant information from the TMA and keep it updated on a regular basis. Another example of a case in which it may be difficult to assess employer participation is if a region is served by a third-party voucher provider. In this case, the transit agency is removed from the sales and distribution process. However, it may be possible to work with the voucher provider to obtain some basic information.

Stakeholders such as commuter organizations and TMAs may be interested in information on employer participation in a transit benefits program, and they also will want to coordinate with the transit agency to collect this information.

Along with tracking the number of employers participating in a transit benefits program, transit agencies might collect information about participating employers (perhaps in the hopes of developing a more effective marketing campaign or making adjustments to the program to better serve employer needs) such as the following:

- **Employer location.** Understanding the location of employers participating can help marketing campaigns by indicating areas where the transit benefits program is popular or areas that are currently not well represented in the program. Location could be tracked very specifically with geographic information systems (GIS) software based on address, zip code, city, or some other type of zone. For example, Denver's Regional Transportation District (RTD) tracks employers in zones to differentiate the central business district (CBD) from suburban employers (also related to the pricing of the Eco Pass).
- **Worksite size.** The number of employees at each worksite can help in assessing the total number of employees in the region with access to transit benefits and whether a bigger internal marketing push could increase the number of transit riders at particular worksites. This information can also indicate whether the program type appeals to employers of a certain size. The research for this study has shown that universal passes tend to appeal more to large employers, whereas monthly passes appeal more to small employers.
- **Employer payment.** Does the employer fully subsidize or partially subsidize the transit benefits program, or does the employer only offer an employee-paid, pre-tax benefit program? In many regions this information is unknown because the transit agency tracks only employer participation and the number of passes distributed, not employer contributions to the cost of transit. Understanding how many employers contribute money to the program may be important in projecting effects on transit ridership (based on sample surveys of employers that do pay and those that do not) and can also help in understanding what is most attractive to employers and whether marketing strategies should change.
- **Industry.** Although few transit agencies collect information on the industries to which participating employers belong, this information might be useful in tracing patterns in the types of businesses most amenable to implementing a transit benefits program.

**Employee Participation.** If transit benefits programs are to have an impact on transit ridership and vehicle travel, expanding employee access to the programs and ensuring that employees are aware of these programs is critical. Employee

participation may be tracked using two metrics: (1) the number of transit benefits recipients (the number of people who actually get a transit pass, voucher, or some other type of fare media from their employer) and (2) the use of the transit benefits (the number of transit users, the systems and/or routes they use [if the pass or voucher can be used on multiple systems], and the frequency of use).

Transit agencies may not know how many employers are enrolled in transit benefits programs because of the type of program they adopt. If they have a monthly pass program, the number of passes sold per month is probably a good indicator of the number of participating transit riders because each rider requires one pass per month. However, with a ticket book system, an infrequent transit rider might use one ticket book every few months, in which case there are months that the rider is using transit but not purchasing fare media. If the area has a voucher program, the number of vouchers may not be equal to the number of riders; one rider may need only one \$20 voucher per month, whereas another rider may require three. In these two examples, the number of units sold by the transit agency does not necessarily equal the number of riders using transit benefits.

There are two ways to obtain information on the number of transit benefits recipients: ask employers to provide it or survey employees. Employers should know how many employees participate because they have some mechanism by which employees register to obtain transit benefits. Because employers have the option of deciding how often to allow employees to change their enrollment, figures may vary throughout the year. Some regions see enrollment changes seasonally because weather patterns make people more or less likely to ride transit during certain times of year (e.g., in Phoenix, Arizona, some transit riders drive in the summer to avoid waiting outdoors in the extreme heat). Unless the goal is to measure seasonal changes in enrollment, it is probably advisable to obtain information on the number of transit benefits recipients at the same time of year in order to minimize the effect of seasonal change on enrollment numbers.

Employers could be asked when submitting their request for passes or vouchers to provide the number of employees receiving transit benefits. The exact mechanism for providing information on the number of employees receiving transit benefits would vary. For online enrollment, a request for this information could be added to the web site; for fax or mail-in orders, the information request could be added to a form. This method would probably not yield a 100-percent response rate, but it would provide at least some basis for estimating ridership. The figures provided could be used to extrapolate information to all employers. If an employer responded one year and not in subsequent years and the total dollar value of passes or vouchers purchased remained the same over the time period, then ridership is probably stable at that employer. Alternatively, the transit agency could set up sample surveys of employees enrolled in the program to get an estimate of the average value of vouchers (or ticket

books, etc.) redeemed per person, and use these figures to estimate the total number of recipients.

The method for estimating use of the transit benefit also depends on the type of fare media that is used. For example, most stored-value cards enable the transit agency to track how many transit rides employees enrolled in the transit benefits program have taken. If such data are not available, surveys can also be conducted (discussed further below).

### *Travel Behavior Changes*

Understanding travel behavior changes is important because it relates to many different goals, such as increased transit ridership, reduced parking demand, and decreased congestion and air pollution. There are several indicators of travel behavior changes, including number of new transit trips (peak and off-peak), change in transit mode share, and change in the vehicle trip rate (VTR) (the number of vehicles divided by the number of commuters). Travel behavior changes can be measured at the individual worksite level, or, to get a sense of travel behavior changes at the regional level, information on travel behavior changes can be extrapolated from a representative sample of worksites.

Information on travel behavior changes can be collected either through surveys of employees at participating worksites before and after implementation of a transit benefits program or through surveys of current transit benefits recipients asking them about changes they have made in their travel patterns. These surveys can also be used to better characterize the travel patterns of transit benefits recipients in terms of the frequency of their use, types of transit services used, and other considerations. It may be difficult, however, to fully capture all of the potential travel effects in one survey (e.g., changes in peak-period rides, off-peak weekday rides, weekend rides, potential to retain riders who otherwise might stop using transit).

Obtaining information about the implementation of the transit benefits program (such as whether the employer pays for the benefit or offers an employee-paid, pre-tax program) and the location of the employer (by jurisdiction or urban/suburban location) as part of the travel surveys can be helpful in assessing the importance of these factors to the transit benefits program. Information on transit benefits program implementation and employer location may also be useful in marketing the program or understanding impacts at the regional level.

### *Transit Agency Impacts (Ridership, Revenues, and Costs)*

Information on travel behavior provides the basis for evaluating transit agency impacts. Although transit agencies may have different goals, major categories of impacts for transit agencies include systemwide ridership, revenues, and costs.

**Systemwide Ridership.** It may be hard to definitively answer the key question of whether transit benefits increase overall ridership because ridership growth from a transit benefits program may be difficult to distinguish from background growth, or ridership growth from a transit benefits program may mask a decline in ridership. As noted above, some transit fare media allow the agency to track actual usage of transit services; still, these data may not show whether transit use increased as a result of the transit benefit or whether prior transit users are now participating through the employer program.

The most appropriate way to estimate impacts on systemwide ridership is to collect data on changes in travel behavior from surveys of employees (ideally before and after implementation of a transit benefits program) and, on the basis of this data, estimate changes to the full set of transit benefits recipients. For example, if surveys show that 10 percent of transit benefits recipients are new transit riders, this figure could be applied to the total number of transit benefits recipients to estimate the number of new riders systemwide. Obviously, the more detailed the survey questions are and the more representative the surveyed employers are, the better the estimate of systemwide ridership impacts will be. For instance, a better estimate could be determined by dividing participating employers into several groups based on location (e.g., CBD, urban fringe, or suburban) or type of program (e.g., employer-paid and employee-paid), and extrapolate for each of these groups separately using a sample of employers in each group. Moreover, collecting more detailed information, such as the average number of new transit trips per week, will be more useful than simply knowing whether employees are new to transit or increased their use of transit.

**Revenues.** For most transit agencies, it should be fairly straightforward to track the revenues received from participating employers. Either the employers are paying the transit agency directly, or employees with vouchers are redeeming them for fare media. Comparing these revenues to overall farebox revenues should determine the percentage of revenue coming in through the transit benefits program.

It may be useful to compare the percentage of ridership attributed to the transit benefits program to the percentage of revenues attributed to the transit benefits program. If they are roughly proportionate, then the transit benefits program is bringing in riders who pay the same on a per-person basis as riders using regular fare media. If the share of revenues is higher than the share of ridership associated with the program, then the transit benefits program is making more money for the transit agency on a per-person basis than riders from the general public, and if revenues share is lower, the transit agency is making less. These percentages do not necessarily determine whether the program is cost-effective or providing a discount because many factors affect revenues in relation to the number of riders (e.g., average length of trip, number of transfers, and availability of discounted fare media for groups like senior citizens and youths).



In order to estimate whether, and to what extent, a transit benefits program increases revenues, it is important to examine the structure and pricing of the employer pass program. For example, a pay-per-ride system will result in increased revenues for each additional transit trip that employees make. A monthly pass, however, will not. Therefore, providing a discounted monthly pass to employees who previously used face-value monthly passes will actually lower revenues, but providing a discounted monthly pass to employees who previously did not use transit, or who rode infrequently and paid fares for each ride, will increase revenues.

Revenues per vehicle operating hour is another metric that transit agencies may wish to track. If the transit benefits program brings in enough new riders during peak periods to support additional transit services, the increase in transit vehicle operations will create additional operating costs for the transit agency; if revenues do not rise proportionately, revenues per vehicle operating hour may fall. On the other hand, programs that increase off-peak transit ridership and overall revenues are likely to see higher revenues per vehicle operating hour.

**Costs.** Transit benefits programs may also be able to reduce certain costs to transit agencies because of lower per-rider costs on handling cash or fare media. For example, selling passes in bulk to employers may be cheaper than selling them individually, because fewer transactions may mean less staff time. Passes can also mean less wear and tear on fareboxes and shorter boarding times for passengers, which may produce some operating efficiencies. Data on the costs of cash handling may not be readily available, but transit agencies may wish to explore this information in order to demonstrate the scope of potential cost savings.

Balanced against these potential cost savings is the expense of marketing a transit benefits program to employers. Transit agencies often employ several full-time staff members to work with employers and produce marketing campaigns aimed at raising awareness about the program among both employers and employees. Documenting these costs is important for cost-effectiveness evaluation.

### *Regional Impacts (Vehicle Travel and Emissions)*

The regional impacts of a transit benefits program include reductions in vehicle travel, fuel consumption, and air pollutant and greenhouse gas emissions. Analyzing these effects can be important for regional organizations (such as a metropolitan planning organization or the transit agency) to justify investments in these programs. Analyzing these effects can also be important if a region wants to take air quality credit for the transit benefits program as a voluntary transportation emissions reduction program within a state implementation plan or for use in a transportation conformity analysis.

Analyzing regional impacts builds directly off of analysis of systemwide transit ridership impacts, but requires addi-

tional information. In addition to information on the increase in transit use, the analyst needs to know the following:

- **What modes of transportation (driving alone, carpooling, vanpooling, walking, or bicycling) did people switch from?** For example, every transit trip that replaces a single-occupancy vehicle trip results in one less car on the road; however, a transit trip that replaces a walk trip does not remove any vehicles from the road, and replacing a carpool trip likely reduces only a fraction of a vehicle trip.
- **What was the length of the trip (in miles)?** In order to estimate reductions in vehicle miles traveled (VMT), it is important to know the average vehicle trip length for any vehicle trips reduced. It is preferable to collect this information in the employee survey that is used to assess changes in travel behavior. Alternatively, one could assume the regional average commute trip length for a transit trip. However, the average commute length in a region may be substantially shorter or longer than commute trips made by transit riders using transit benefits. For example, suburban commuter rail trips tend to be longer than average commutes, whereas bus commute trips tend to be shorter. The ideal is to match the transit mode—commuter rail, light rail, bus, or other—taken by transit benefits recipients with the average trip length on that particular transit mode.
- **How did people access transit (driving, [e.g., to a park-and-ride lot or transit station], walking, or biking)?** For accurate emissions analysis, it is important to know the number of vehicle trips reduced as well as the number of vehicle miles reduced. When a vehicle first starts up, the emissions control equipment is not as effective as when the engine is warm, and the vehicle produces much higher emissions in the first minutes of the trip (called “cold start” emissions). As a result, a person who switches from driving 10 miles to work to driving 1 mile to a transit station and taking transit the rest of the way is reducing emissions, but not as much as a person who walks to the station and never starts up the car. If a region contains a lot of parking at transit stations or park-and-ride lots, it will be important for travel surveys to ask how people access the transit station. Vehicle emissions reductions are then calculated on the basis of reduced vehicle trip-based emissions and vehicle mileage-based emissions.

Emissions factors for air pollutants can be developed using the U.S. Environmental Protection Agency’s (EPA’s) MOBILE6 model (or the EMFAC model in California). However, emissions factors appropriate for a region can usually be obtained from a state air quality agency or metropolitan planning organization that has run one of these emissions models for use in other regional analyses. Use of agreed-upon emissions factors is particularly important if the emis-

sions analysis is going to be documented as part of a transportation conformity analysis or for emissions credit as a voluntary mobile emissions reduction program.

If the analysis is to gain a sense of emissions reductions associated with a transit benefits program at a regional level, for a sub-area (like a business district), or for an individual employer, an average national (per mile) emissions factor can be applied. Several tools are available that can help in the analysis, such as EPA’s COMMUTER Model and Commuter Choice Business Benefits Calculator.

**Using Surveys to Measure Impacts**

The most common technique for obtaining information on awareness, participation, and travel behavior—which in turn feed into transit agency and regional impacts—is surveying. Surveys are useful in that they can measure both behavior and motivation. If use of transit benefits is lower than anticipated, or employees do not seem to know about transit benefits programs, a well-designed survey can help reveal why. Even if the main goal of the survey is determining the program’s effectiveness at increasing transit ridership, the survey can also be used to obtain important secondary information that can help shape how the transit benefits program is implemented or marketed.

This section discusses some of the technical issues involved in developing, measuring, and administering a good survey: who, how, and when to survey; survey design (including sampling, ensuring a good response rate, and developing a survey instrument); analysis of survey results; and comparing surveys. Much of the information on survey design in this section

is adapted from the second edition of *Mail and Internet Surveys: The Tailored Design Method* (5). For information on conducting on-board transit surveys, see *Surveying for Public Transit: A Design Manual for Customer On-Board Surveys* (6).

*Who, How, and When to Survey*

Three populations can be surveyed: all commuters, all employees eligible to receive transit benefits (i.e., all employees at participating employers), and all employees actually receiving transit benefits (i.e., transit benefits recipients). The survey data reviewed for this report came from all three populations. Table 2 highlights what data can and cannot be obtained from which survey population and shows which survey methods—Web-based surveys, phone surveys, and paper surveys—work best in which circumstances. It is also possible to mix survey methods, for example, reaching some respondents by phone and others by e-mail.

In general, with any type of survey, there is a tradeoff between the depth of information collected and the number of people responding. Surveys can collect very detailed information from a smaller population or a few key responses from a larger population. Each type of survey is described briefly below.

**Surveys of All Commuters.** Surveys of all commuters, sometimes called “state-of-the-commute” surveys, can be very helpful in determining the percentage of all commuters who receive transit benefits—information that would not show up in an employer-based survey.

**TABLE 2 Comparison of three survey populations on data yielded and survey method**

		Survey Populations		
		All Commuters	Employees at Participating Employers	Transit Benefits Recipients
Data	Information on overall participation in transit benefits throughout region	Yes	No	No
	Information on why some employees do not participate	Yes	Yes	No
	General influence of transit benefits on travel behavior	Yes, but may be too few responses from employees receiving transit benefits to obtain a meaningful sample	Yes	Yes
	Before and after travel behavior of transit benefits recipients	No, since there is wide variation in when people began receiving benefits	Yes, ideally in before and after surveys	Not truly before and after, but can ask recipients how they previously commuted
	Weekly commute mode split	No, too complex for this survey type	Yes	No, but can ask how often they use transit
Survey Methods	Web-based	No, cannot guarantee random sample	Yes, if all employees have good Internet access	Yes, if participating employees have good Internet access
	Paper	Maybe, but response rates would probably be very low	Yes	Yes
	Telephone	Yes, best way to reach random sample of commuters; mail-back surveys have low response rates	No, other means are more efficient	No, other means are more efficient

However, state-of-the-commute surveys have limited utility in eliciting detailed information about changes in travel behavior from transit benefits recipients. There are several reasons for this. In most regions, the number of respondents receiving transit benefits is fairly small compared with the number of all commuters; it is, therefore, time-consuming to obtain a large enough sample to draw meaningful conclusions. In addition, the best way to determine the impact of transit benefits on employees is to ask about behavior directly before and after transit benefits were implemented at the worksite. If a commuter has been in a job for some time, or if transit benefits were already offered when the commuter started working there, then the response will not reflect a change in travel behavior caused by introducing a commuter benefit at a worksite.

**Surveys of All Employees at Participating Employers.** Surveys of employees at worksites participating in a transit benefits program can elicit important information about employee travel behavior, particularly if surveys are conducted before and after implementing transit benefits. There is no question that can be answered by a survey of participating employees that cannot also be answered by one given to all employees. If employees do not participate, they can simply skip the questions that are not relevant.

Surveying all employees at participating employers is strongly recommended for the most accurate information on travel behavior changes. Surveys of all employees can reveal two key pieces of information that are relevant to most transit agencies' employer transit benefits programs:

- **The before and after commute mode split.** If only participating employees are surveyed, that information can show the percentage increase in transit use, but as the research collected for Chapter 3 of this report shows, a 100-percent increase can be from 1 percent to 2 percent. Increases in transit ridership should be considered in the context of starting mode split.
- **The reasons that employees do not participate.** For purposes of determining marketing strategies and potential program changes, it is as important to know why employees do not participate as it is to know why they do. Learning that riding transit would double commute time for employees has very different implications from learning that an additional \$10 benefit might cause employees to switch from driving alone.

To capture before and after travel behavior, the survey should be conducted before and after the transit benefits program is implemented at the workplace. Surveys should be administered during a typical commute week, not during holidays or periods that for some reason would have an unusual commute pattern (e.g., during a storm or other weather event, or during a major festival). Surveys asking about commute behavior over a 1-week period should be

given to all employees simultaneously so that they are all reporting on the same week.

The drawbacks to this type of survey relate primarily to logistics and resources. First, it may be difficult to get employers to agree to conduct two surveys because it often takes some effort on the part of the employer to ensure that the survey is distributed to an appropriate sample of employees (or all employees) and receives a reasonably high response rate. Second, since employers will sign up for the transit benefits program at different times, the agency will need to conduct surveys at various points throughout the year (whenever an employer indicates that it would like to sign up), which makes the timing of compiling and comparing survey data more complex. Finally, if a transit benefits program has been in effect for many years, it will not be possible to go back to conduct a "before" survey for employers already enrolled in the program, and it is possible that the characteristics of newly enrolled employers will not match existing employer characteristics (e.g., if the first employers to sign up were downtown employers and newer employer participants tend to be more suburban employers). For these reasons, before and after surveys have most often been conducted in areas with mandatory CTR programs and by transit agencies that have universal pass programs that customize pricing based on employee survey data.

**Surveys of Transit Benefits Recipients.** Surveys of transit benefits recipients, like those of all employees at participating employers, usually must be conducted with some involvement of the employer (e.g., to distribute the surveys with the transit passes or to direct employees to a web-based

### State of the Commute Surveys

Commuter Connections, the regional commuter assistance program in Washington, DC, conducted a state of the commute survey in spring 2001. 600 people were surveyed by telephone in each of 12 local jurisdictions for 7,200 responses. The 90 items included questions on 5-day mode splits, reasons for selecting modes, awareness of alternatives to drive-alone commuting, and employer commute services. Although this was the first comprehensive survey, questions were designed to mirror those on previous surveys on specific topics, such as telework.

RIDES for Bay Area Commuters in the San Francisco Bay Area has conducted a state of the commute survey annually since 1992. In the most recent one, "Commute Profile 2003," 400 commuters in 9 counties (total of 3,600 responses) were asked 75 questions, focused on commute modes, awareness of alternatives, and the quality of their commute (average time to work, etc.) (7). Some questions remain standard from year to year to provide continuity, while others are rotated depending on topics of current interest. The reported direct cost to conduct the survey was \$51,000, which does not include questionnaire design, analysis, or report production.



survey). The benefits of this type of survey are (1) that it may be easier to get a high response rate from participants than it is from employees in general, and (2) that more information can be collected that pertains specifically to the commuter benefit (e.g., how easy it is to trade in vouchers for fare media). Also, a survey can be conducted at one point in time for many employers and information can be gathered immediately, as opposed to conducting one survey and then waiting for a second survey to be conducted to compare results.

In order to capture information on changes in travel patterns, surveys of transit benefits recipients usually must ask about past behavior (e.g., “Did you ride transit before receiving transit benefits?”). Because these questions ask transit benefits recipients to remember information from the past (such as the number of transit trips taken per week), it is more difficult to capture detailed travel information. Further, the longer the transit benefits have been in place, the greater the chance that people will simply have forgotten how they commuted before receiving benefits and the greater the chance that more employees will have no basis for comparison because the transit benefits program was already in place when they started working for the employer.

### Survey Design

**Reducing Error.** Regardless of what type of survey is implemented, the way a survey is written and administered can reduce nonresponse error, as well as reduce errors in sampling, coverage, and measurement. Nonresponse error can occur when some respondents selected to participate in a survey either refuse to participate or do not respond to all items in the survey. Error can occur in sampling when only some, rather than all, of the elements of a survey population are surveyed. Errors in coverage occur when not all members of the population are given an equal chance of participating. Finally, errors in measurement can occur as a result of poor wording of survey questions.

Recommendations for reducing nonresponse bias, as well as reducing errors in sampling, coverage, and measurement are given below.

**Nonresponse Error.** It is important to maximize the response rate, as nonresponse can be a major source of error. There are three potential sources of nonresponse bias:

- Members of the survey population are not reached (e.g., they do not have access to the Internet or e-mail or do not have a work phone) so they are not given an opportunity to participate.
- Those asked to participate in the survey refuse to do so.
- Those asked to participate are unable to do so (e.g., because of language barriers).

Nonresponse bias on survey estimates can result in significantly different results. For example, assume that in a workforce of 1,000 employees, 150 (15 percent) use non-SOV modes. If those 150 are more likely to respond to the survey, the survey results could be biased. If only 250 people (25 percent) respond, but that number includes 100 of the non-SOV commuters, the survey results would show that 40 percent (100 divided by 250) use non-SOV modes, instead of the true 15 percent.

Survey response rates can be maximized through a number of means, including contacting respondents multiple times, personalizing the materials, keeping introductions short, targeting gatekeepers when appropriate, and tailoring information to specific subgroups.

**Sampling.** For transit agency surveys of employees, there is no single list of individuals from which to draw the sample. However, a multistage sampling method can provide an effective means of reaching employees. Generally, every employee is attached to one employer. Therefore, the transit agency can use a two-stage sampling strategy: first, selecting the employer and second, selecting employees from within those chosen employers. However, employers may not be willing to conduct sample surveys of their employees. Transit agencies may be better served by selecting fewer employers and surveying “all” employees. Furthermore, different sampling plans can be designed to achieve the same overall probability of selection for each employee, as shown in Table 3.

**TABLE 3 Sampling plan designs for same overall probability of selection (1 in 100)**

	Stage 1	Stage 2	Probability of Selection at Stage 1 × Probability of Selection at Stage 2 = Overall Probability of Selection
<b>Sampling Plan Design A</b>	Select all employers and list all employees.	Select 1 out of every 100 employees.	$1/1 \times 1/100 = 1/100$
<b>Sampling Plan Design B</b>	Select one-half of all employers.	Select 1 out of every 50 employees.	$1/2 \times 1/50 = 1/100$
<b>Sampling Plan Design C</b>	Select 1 in 10 employers.	Select 1 out of every 10 employees.	$1/10 \times 1/10 = 1/100$

The three sampling plan designs shown in Table 3 all yield the same number of samples. However, the sampling plans become less expensive from A to C as fewer employers need to be contacted and convinced to participate. The tradeoff is that the precision of each sample is likely to decline as fewer employers are sampled and more employees are sampled from each employer.

**Coverage.** The transit agency can reduce coverage errors by making sure the contact list contains everyone in the survey population who should be included *and* excludes people who should not be surveyed. For example, a survey of a database of employers participating in the transit benefits program should include those employers who left the program and who perhaps were purged from the database. At the same time, the survey should exclude those employers who enrolled outside the period of interest (e.g., more than 1 year ago).

**Measurement.** A survey instrument—the actual questions—should be designed to collect information that will help determine whether the employer transit benefits program is meeting its goals. Structuring the questionnaire well can help minimize measurement error and increase the response rate. Exhibit 9 lists several questions to consider when reviewing a survey instrument.

**Special Considerations for Web and E-mail Surveys.** If a transit agency is considering using Web or e-mail surveys, it should recognize the potential limitations. Not everyone has access to a computer at home or work. Moreover, the actual layout that respondents see on a computer may be affected by monitor size and connection speeds (high speed versus modem). In addition, computer literacy can vary significantly. If the agency does pursue a Web or e-mail approach, it is recommended that the agency let respondents use alternative ways to respond (e.g., print and mail).

**Sample Surveys.** Exhibit 10 and Exhibit 11 show sample surveys. Exhibit 10 shows a sample survey for *all employees at participating employers*. The survey would presumably be distributed through the employer, so basic information about the employer's program would also be collected with each survey. The survey can be modified for use in different situations, and various questions could be added to address additional issues (such as why employees do not participate in a transit benefits program). This survey is designed to be distributed before and after transit benefits are implemented for maximum utility. Exhibit 11 shows a sample survey for *transit benefits recipients*. This survey could be used for cases in which the benefit has already been introduced, and therefore it is not possible to conduct a before and after survey.

### *Analysis of Survey Results*

Although there are certainly many ways to customize the surveys presented in Exhibit 10 and Exhibit 11, the basic

questions that both surveys ask can yield a wide variety of information about employees' travel behavior. Below are some effects that the surveys could be used to measure.

Effects that could be measured by both kinds of surveys include the following:

- **Impact of worksite location on use of transit benefits.** If the survey is conducted at multiple worksites, it can determine whether employees in downtown locations are more likely to switch to transit than those in suburban locations and what the magnitude of that difference is.
- **Impact of home location on use of transit benefits.** With the data about employees' home zip code (recommended because it provides the right amount of both detail and anonymity), the survey results can track whether groups of employees in certain areas were more likely to switch to transit or vanpools. It can also relate the length of the commute to the mode; for example, it may be that people living the furthest away have the hardest time switching from drive-alone commuting. *If it would be difficult to code zip code data, the surveys could ask about distance from home to work instead.*
- **Impact of employer-paid versus pre-tax benefits.** Comparing information from multiple worksites, provided they are similar on other attributes such as location, can help determine whether employer-paid commuter benefits are more likely to result in an increase in transit or vanpool ridership than employee-paid, pre-tax benefits. If a recent survey is compared to a previous survey, it is also possible to see whether employee-paid benefits are more likely to be used by employees previously riding transit or vanpools and whether employer-paid benefits are more likely to encourage switching from drive-alone commuting.
- **Impact of benefit level.** At worksites with employer-paid benefits, the survey results can be used to draw comparisons between employers with different benefit levels (e.g., a firm that pays \$20 per participating employee per month and a firm that pays \$60 per participating employee per month). Benefit levels can also be compared to the prevailing price of transit paid by employees. For example, if a monthly pass costs \$80, a \$20 benefit might not be very influential in changing mode share, but if the monthly pass costs \$30, a \$20 benefit may be very influential.

Effects that could be measured by the survey of all employees at participating employers include the following:

- **Current mode split.** By summing and averaging the 5-day mode split for all employees, it is possible to determine the percentage of total commute trips that are taken using each mode. This is more accurate than asking a yes/no question about modes ("Do you ever ride transit to work?"), which tends to overcount transit

**EXHIBIT 9. Questions to consider when reviewing a survey instrument**

- Do respondents already have an accurate, ready-made, answer?
- Can people accurately recall and report past behaviors?
- Is the respondent motivated to answer each question?
- Does the survey instrument use simple words over specialized words? For example, would the public know what is meant by “employer-provided transit subsidies” or “guaranteed ride home” program?
- Does the survey instrument use as few words as possible but still use complete sentences?
 

<p>PROBLEM:</p> <p><i>Number of miles to work</i></p>	<p>REVISION:</p> <p><i>How many miles do you travel to work?</i></p>
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- Does the survey instrument avoid vague quantifiers when more precise estimates can be obtained?
 

<p>PROBLEM:</p> <p><i>How often did you ride the bus during the past year?</i></p> <p>Never Rarely Occasionally Regularly</p>	<p>REVISION:</p> <p><i>How often did you ride the bus during the past year?</i></p> <p>Not at all A few times About once a month Two to three times a month About once a week More than once a week</p>
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- Does the survey instrument use balanced scales? The number of positive choices should equal the number of negative choices.
 

<p>PROBLEM:</p> <p><i>How satisfied were you with the service you received when you obtained your transit pass?</i></p> <p>Completely satisfied Mostly satisfied Somewhat satisfied Neither satisfied nor dissatisfied Dissatisfied</p>	<p>REVISION:</p> <p><i>How satisfied were you with the service you received when you obtained your transit pass?</i></p> <p>Completely satisfied Somewhat satisfied Neither satisfied nor dissatisfied Somewhat dissatisfied Completely dissatisfied</p>
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- Does the survey instrument avoid the use of check-all-that-apply question formats, if possible? Long lists tend to have the first items checked more than the items at the end.
- Does the wording of questions allow essential comparisons to be made with previously collected data? For example, if particular modes were used in a previous survey, the current survey could match them for continuity. Alternatively, it might be useful to compare the survey responses with 2000 Census journey-to-work questions, which use the following checklists:
 

How did YOU usually get to work LAST WEEK? If you usually used more than one method of transportation during the trip, mark [X] the box of the one used for most of the distance.

<p>Car, truck, or van Bus or trolley bus Streetcar or trolley car Subway or elevated railroad Ferryboat</p>	<p>Taxicab Motorcycle Bicycle Walked Worked at home Other method</p>
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How many people, including YOURSELF, usually rode to work in the car, truck, or van LAST WEEK?

<p>Drove alone 2 people 3 people 4 people</p>	<p>5 people 6 people 7 or more people</p>
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- Does the survey avoid double-barreled questions? If the survey instrument links two unrelated questions, the respondent cannot give separate answers. In the example below, transit benefits could lower the cost of transit but be inconvenient, or they could cost the same but provide convenience.
 

<p>PROBLEM:</p> <p>Do you use transit benefits because they lower the cost of your commute and provide a convenient way to pay your transit fare?</p>	<p>REVISION:</p> <p>Do use transit benefits because they lower the cost of your commute?</p> <p>Do use transit benefits because they provide a convenient way to pay your transit fare?</p>
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**EXHIBIT 10. Sample transit benefits survey for all employees at a participating site**

**To be completed by employer:**

Organization name: \_\_\_\_\_

Zip code of worksite: \_\_\_\_\_

Do you currently offer a transit benefit?  yes  no

If yes, how is the program structured? (check all that apply)

employer pays toward the cost of the benefit: How much per month per employee? \_\_\_\_\_

employees pay through pre-tax payroll deduction

**To be completed by employee:**

Please take a few moments to fill out the following questions. Your responses will help us plan for future commuter programs.

What is the zip code where you live? \_\_\_\_\_

For the past week, how did you get to and from work? (Check ONLY the primary mode; if for example you drove to a transit station and took transit most of the way to work, check “transit.”)

	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
Drove alone					
Carpool					
Transit					
Vanpool					
Bicycled or walked					
Telecommuted					
Didn't work that day					

If you used transit, did you drive to the transit station?

yes  no

If you do not use transit, why not? (check all that apply)

Home or work location not convenient to ride transit

It would take too much time/Inconvenient schedule

Too expensive

Need car for work

Need car to pick up children or other family needs

Other (write-in): \_\_\_\_\_

Thanks for your assistance!

**EXHIBIT 11. Sample transit benefits survey for transit benefits recipients**

Please take a few moments to fill out the following questions. Your responses will help us plan for future commuter programs.

What is the name of your employer? \_\_\_\_\_

What is the zip code where you work? \_\_\_\_\_

What is the zip code where you live? \_\_\_\_\_

How does your employer offer the transit benefit? Mark only one.

- Pays all or a portion of transit/vanpool costs    
  Pays a portion and allows employees to reserve pre-tax income    
  Allows employees to reserve pre-tax income only

If your employer pays all or a portion, what is the dollar value per month that you receive? Mark only one.

- \$0-10    
  \$11-20    
  \$21-40    
  \$41-60    
  \$61-80    
  Over \$80

Do you ride transit more often in response to receiving the commuter benefit from your current employer?

- yes     no

Circle one response in each box to indicate the average number of days per week you used transit before and after receiving the transit benefit from your current employer.

	Before receiving benefit							Currently						
	0	1	2	3	4	5+	N/A (I have always received the benefit from this employer)	0	1	2	3	4	5+	
Avg. number of days per week using transit to <b>commute to work</b>														
Avg. number of days per week using transit for <b>other trips</b> (lunch, errands, shopping, etc. including weekends)														

How do you usually get to the transit stop/station from your home?

- drive      walk, bicycle, or other

*Note: Depending on the specifics of the transit benefits program and the transit agency, the survey could also include questions regarding which transit provider they use and what fare media they purchase (for example, if the transit agency issues both 10-ride ticket books and monthly passes).*

Thanks for your assistance!

ridership because it captures people riding only occasionally. Moreover, summing and averaging the 5-day mode split for all employees accurately captures those people who ride infrequently, and therefore is better than asking only about primary commute mode (“Which one of the following modes do you use more than three times per week?”)

- **Change in commute mode split.** If the transit agency surveys before and after commuter benefits are implemented, the same mode split information can be collected at both points in time, allowing comparisons of transit and vanpool ridership. These data can also be used to determine whether new transit and vanpool riders switched from driving alone or from a mode such as carpooling or bicycling. This is important information for analyzing air pollution impacts.
- **Trends in commute mode split.** If the survey is administered every year or two, it can provide important information about overall trends in commute mode. It can also help determine the predominant “leveling off” in transit mode split and how long it takes to reach. Knowing how long it takes to reach this leveling-off point could be helpful in pricing a universal pass program because the program could factor in the number of new transit riders and reprice the passes after the main increase in ridership occurs.

The survey of transit benefits recipients only would yield no information on mode shares or the reasons why some people do not use the transit benefit. However, it could be used to analyze within this limited group the impacts of home and work location, employer-paid versus pre-tax benefits, and the benefit level. Although fairly similar to the all-employees survey, the transit-benefits-recipients-only survey includes an additional question on whether recipients have increased their use of transit, a common question in recipients-only surveys. This level of detail could yield fairly broad conclusions (e.g., “Approximately 60 percent of recipients increased their overall use of transit”) as well as more specific ones (e.g., “More than 40 percent of recipients increased their use of transit for commute trips, with the larger number of those increasing from 1 transit trip to work per week to 2 trips,” and “over 30 percent increased their noncommute use of transit.”) Most importantly, the question on whether recipients have increased their use of transit can be used to determine what percentage of all recipients are new riders (new riders would be those respondents to the recipients-only survey who took, on average, zero trips per week before receiving benefits).

Although it may be easier for transit agencies to survey only transit benefits recipients, this survey could also be combined with the all-employees survey to create an “after” survey of all employees. In addition to providing information on how often transit benefit recipients rode transit after benefits were implemented, a combination survey would provide information on transit use among nonrecipients and on why employees do not

take advantage of transit benefits. The survey could also ask about employees’ commute modes before transit benefits were introduced.

### *Comparing Survey Results*

Although some surveys have compared employees who receive transit benefits to those who do not receive transit benefits on a regional scale, if employer location has not been controlled for in the comparison, it is not a valid comparison. It is entirely possible that employees receiving transit benefits are more likely to work in CBDs, whereas employees not receiving transit benefits are more likely to work in suburban areas. The “apples to apples” comparison would be between two matched groups of employers, identical in most respects on the factors that influence transit use (location, paid or free parking, and workforce type) and different only in whether they offer transit benefits.

To indicate a relationship between a change in mode split or transit ridership and the transit benefits program, the survey data must show that the change occurred after the program was introduced at a worksite and that the change would not have occurred without the program (e.g., if transit services were recently added to the worksite, the impact might not be due solely to the transit benefits program). Therefore, the agency administering the survey should attempt to conduct the survey within 6 months of a worksite implementing a transit benefit program (in order to minimize other changes that may have an effect on travel behavior) and should identify other factors (e.g., changes in transit service, layoffs at the worksite, and a change in office location) that might influence employee commuting patterns. The agency administering the survey also could use a similar worksite that did not introduce a transit benefits program as a control group.

## **CONCLUSION**

Transit agencies, commuter organizations, metropolitan planning organizations, and other stakeholders often have multiple and differing goals for a transit benefits program. Analyzing the impacts of a transit benefits program on each of these goals, therefore, may require collecting different types of data and using different data collection and measurement techniques.

Surveys are an important data-collection mechanism for evaluation of transit benefits programs and are particularly useful for analyzing the impacts of transit benefits programs on employee travel behavior. Information on employee travel behavior, in turn, can be used to analyze the effects of the program on vehicle travel, parking demand, energy consumption, and motor vehicle emissions. Surveys can also be used to measure progress in meeting other objectives (e.g., awareness of the transit benefits program and satisfaction with the program) and in identifying ways to improve the program



(e.g., by asking why employees do not use transit, what problems they have experienced, and what suggestions they have for improvements). Other types of data useful for analyzing impacts include more basic tracking measures, such as employer participation and revenues taken in through the program.

Regular evaluation of a transit benefits program is useful to transit agencies and other stakeholders for several purposes, including justifying programs, securing funding, and determining ways to improve performance. This guidebook has

described a general approach to program evaluation, building on research from surveys and discussions with transit agency staff in various parts of the United States. For more information on the effects of transit benefits programs that have been found across the United States, the reader is encouraged to read Chapter 3 of this guidebook. Chapter 3 of this guidebook reports on the research that formed the foundation for Chapter 2 and provides information on the range of effects that can be expected from a transit benefits program and the factors that influence these effects.

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## CHAPTER 3

# UNDERSTANDING THE IMPACTS OF TRANSIT BENEFITS PROGRAMS

Chapter 3 of this report discusses the impacts of transit benefits programs on employee travel behavior and transit agencies' ridership, revenues, and costs. Limited data were available to evaluate vanpool and other financial benefit programs, and these results are discussed only briefly. This part of the report is designed to document the experiences of various transit benefits programs across the United States and to shed light on factors that influence the effectiveness of transit benefits programs. It is hoped that this information will help transit agencies and other organizations set realistic expectations for potential program impacts.

Chapter 3 of this report focuses on two types of impacts associated with transit benefits programs: (1) impacts on employee travel behavior and (2) impacts on transit agencies' systemwide ridership, revenues, and costs.

### IMPACTS ON EMPLOYEE TRAVEL BEHAVIOR

Understanding the impacts on employee travel behavior of transit benefits programs is key to quantifying a wide range of effects associated with these programs, including employer parking cost savings, employee commute cost savings, increases in transit ridership, and reduced air pollution and greenhouse gas emissions.

The primary question this study addresses is: **To what extent do employees increase their use of transit when transit benefits are offered?** To the extent that increases in transit ridership do occur, transit agencies and others also want to know the following:

- **What trips are affected?** Do transit benefits recipients increase only their commute trips, or do they increase their noncommute trips as well? This is important because there is typically excess capacity on transit services during noncommute periods.
- **To what extent do new transit riders shift from drive-alone commuting?** This is important since there would be little reduction in traffic and emissions if new transit riders previously walked, bicycled, or carpooled to work.
- **What factors affect the level of travel behavior change?** This information is important for agencies promoting these programs to better understand what level of employee response to anticipate from their programs.

This information also can help agencies better understand how to design employer programs and target marketing efforts to maximize ridership gains.

### Data Sources and Approach

Two primary data sources were used to answer these questions: (1) surveys conducted by transit agencies, commuter organizations, and other agencies in regions with transit benefits programs, either published or unpublished (referred to as "surveys"), and (2) worksite trip reduction reports from regions with mandatory commute trip reduction (CTR) programs (referred to as "data sets").

Figure 5 displays a map showing the locations where these surveys and data sets were obtained, and each type of data is described briefly below.

#### *Survey Data from Transit/ Commuter Organizations*

Survey data were collected from transit agencies, commuter organizations, and third-party benefits providers around the country, as well as through a review of literature (source information for survey data is provided in the notes to Table 4). In total, the research team identified 21 surveys conducted in 12 regions from 1989 to 2004 (the same survey was administered in Philadelphia, Pittsburgh, and Harrisburg in 1993, but is counted as three surveys; Philadelphia, Harrisburg, and Pittsburgh are counted as separate regions; Montgomery County, MD, and Washington, DC, are considered one region; and San Francisco, CA, and San Jose, CA, are considered two regions) that contained some quantitative results on the travel impacts associated with implementing a worksite transit benefit. The surveys included both published and previously unpublished results. All of these surveys focused exclusively on transit ridership; vanpool ridership was not discussed. Most of the surveys were conducted prior to 1998, when tax law changes enabled employers to let employees set aside income on a pre-tax basis for transit or vanpool benefits; therefore, most of the surveys address only employer-paid benefits. Table 4 provides information on survey locations, dates, and number of worksites represented and on other survey characteristics.

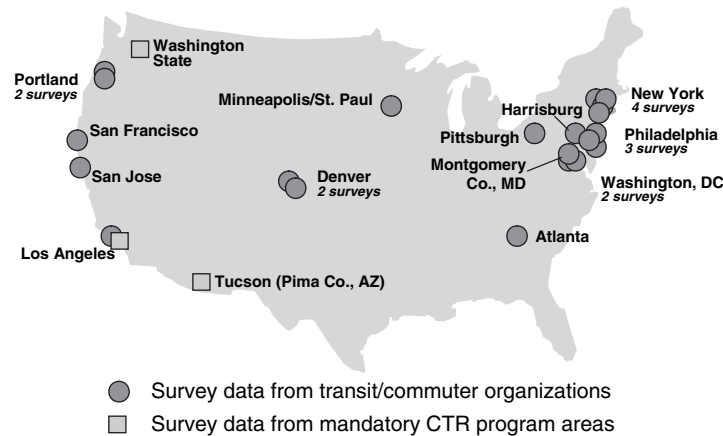


Figure 5. Locations of surveys collected for analysis.

As seen in Table 4, the scope of each survey varied widely. Some surveys cover one employer (e.g., a 2001 survey of employees at the University of California at Los Angeles and a 1990 survey of employees at the Port Authority of New York and New Jersey), some surveys cover a large number of employers (e.g., a 1994 survey of 50 employers in the New York metro area and a 2001 survey of 94 employers in Montgomery County, Maryland), and some surveys are designed to be representative of commuters at a regional level (e.g., a 2001 State of the Commute Survey in the Washington, DC, area; a 2003–2004 survey of commuters in the New York metropolitan area).

The surveys generally fall into three categories, each of which provides a different type of information:

- **Surveys of transit benefits recipients.** These surveys focus solely on people who receive a transit benefit. These surveys provide useful information on the share of recipients who say they are new to transit, increased their use of transit, or reduced driving to work; however, these surveys do not provide information on worksite mode shares or information on how many people do not participate in the program.
- **Before and after surveys of all employees at participating worksites.** These surveys provide important data on mode shares because they involve surveys of all employees. As a result, these surveys provide more complete information on how employees change their travel behavior. Before and after surveys may be more reliable in estimating changes in travel behavior than surveys of transit benefits recipients, which simply ask about previous travel behavior. On the other hand, a long time period between the before and after surveys—a long time being more than one year—could mean that other factors are influencing changes in mode split.
- **Surveys of commuters in general.** These are typically random phone surveys of the general public. These sur-

veys provide information on the share of employees who are aware of or have access to a transit benefits program; these surveys can also provide information on the extent to which employees say they would participate. However, these surveys usually do not provide information on travel behavior changes that occur in response to implementation of a transit benefits program.

In some cases, agencies shared their raw data with the research team, which allowed the team to perform its own calculations and analysis to more readily compare results among different surveys. In other cases, the research team received only a written summary of results and could not perform further analysis. Appendix A explains how various metrics of travel behavior changes were calculated based on available data. Appendix B contains a summary of primary travel metrics from all of the surveys in tabular form for quick reference. Some surveys asked more detailed questions about the level of employer-paid benefit and the number of trips made on transit for commuting and noncommuting purposes, and some provided more detailed breakdowns of results by geographic area (i.e., urban or suburban worksite location). A summary description of all 21 surveys can be found in Appendix C. (Report appendixes are published as *TCRP Web-Only Document 27*. To access this web-only document, go to [www4.trb.org/trb/onlinepubs.nsf](http://www4.trb.org/trb/onlinepubs.nsf) and click on “TCRP Web Documents.”)

It should be noted that although these surveys represent diverse geographic areas, the surveys tend to be concentrated in large metropolitan areas. Also, the transit benefits program type is skewed heavily toward areas with universal pass programs and voucher programs. Eight of the surveys—those in San Jose (1), Portland (2), Denver (2), Los Angeles/UCLA (1), and Minneapolis/St. Paul (1)—involved universal pass programs. Eight of the surveys—those in Philadelphia (3), San Francisco (1), and New York (4)—involved voucher programs. Conventional monthly pass programs are barely represented.

**TABLE 4 Characteristics of surveys from transit agencies, commuter organizations, and others**

Region	Survey Date	Survey Conducted By/For	Who Was Surveyed	Number Surveyed	Surveys Received (Response Rate)	Type of Commuter Benefit	Surveyed Before and after?	Info on Pre-tax or Employer-paid?	Data Issues
San Jose	1996–1997	Santa Clara Valley Transportation Authority (VTA) <sup>1</sup>	All employees at Eco Pass employers	8,360 at 6 employers	920 (11%)	Universal pass	Yes	No (Assume paid)	Survey respondents dominated by one employer. Ten months between before and after surveys (July 1996–May 1997).
Portland, OR	1997–2001	Lloyd District Transportation Management Association (TMA) <sup>2</sup>	All employees at PASSport employers in Lloyd District	5,993 at 42 employers (in 2001 survey)	3,776 (63%)	Universal pass	Yes	No	Several years between the before and after surveys. Meanwhile, other commuting programs have been implemented. Surveys represent TMA members but do not represent the same individual employers; the TMA estimates that the 1997 survey included 2,000 employees at 15 employers.
Portland, OR	1998–1999	TriMet <sup>3</sup>	All employees participating in TriMet monthly passes and PASSPort	7,333 at 321 employers	N/A	Monthly pass, Universal pass	Yes	Yes	Average 1.3 years between before and after surveys. Breakdown by level of benefit and whether participated in universal pass program.
Denver	On-going, reported as of 2003	Denver Regional Transportation District (RTD) <sup>4</sup>	All employees at Eco Pass employers	5,497 at 37 employers	1,580 (29.3% for pre, 28.4% for post)	Universal pass	Yes	No	Surveys reflect different points in time for different employers. The first survey was conducted immediately before implementing program; the other was conducted 6 months later. Overall low response rate primarily reflects low response rate at large employers. Responses broken out by location: CBD, urban fringe, and suburban.
Denver	1993	Denver RTD <sup>5</sup>	All employees at Eco Pass employers	7,130 (# of employers N/A)	577 (8.1%)	Universal pass	No	No (Assume paid)	Survey only includes CBD employees. Very low survey response rate.
Washington, DC	2001	Metropolitan Washington Council of Governments <sup>6</sup>	Random sample of employed persons	N/A	7,200 (N/A)	Stored-value card	No	No	Telephone survey. Provides statistically significant information on current commuting and use of programs; does not provide information on change in commute behavior.
Washington, DC and elsewhere	1993	General Accounting Office (GAO) <sup>7</sup>	Federal employees around the country (75% in DC metro area)	59,000 at 150 agencies	N/A	Multiple types possible	No	Yes (All employer-paid)	Figures not broken down by region. Of 75 federal employers providing transit benefits, four provided \$60/mo., the rest \$21/mo.

**TABLE 4 (Continued)**

Region	Survey Date	Survey Conducted By/For	Who Was Surveyed	Number Surveyed	Surveys Received (Response Rate)	Type of Commuter Benefit	Surveyed Before and after?	Info on Pre-tax or Employer-paid?	Data Issues
Los Angeles	2001	University of California at Los Angeles (UCLA) <sup>8</sup>	All employees at UCLA	21,149 at 1 employer	N/A	Universal pass	Yes	Yes (All employer-paid)	Survey response rate not reported.
Minneapolis/St. Paul	2003	Metro Transit <sup>9</sup>	All employees at Metropass employers	37,500 at 6 employers represented	N/A	Universal pass	Yes	No	While survey covered larger group, Metro provided data on only the largest six employers.
Atlanta	2003	MARTA <sup>10</sup>	Employees receiving MARTA passes	13,881 at 87 employers	3,340 (24%)	Monthly pass	No	Yes (But results not separated)	Relatively low response rate.
Philadelphia	2000	Delaware Valley Regional Planning Commission (DVRPC) <sup>11</sup>	Employees receiving TransitChek	2,275 (# of employers N/A)	865 (38%)	Voucher	No	Yes	Relatively low response rate.
Philadelphia	1996	DVRPC <sup>12</sup>	Employees receiving TransitChek	5,000 (# of employers N/A)	1,676 (34%)	Voucher	No	No (Assume paid)	Relatively low response rate.
Philadelphia, Pittsburgh, Harrisburg <sup>13</sup>	1993	DVRPC <sup>14</sup>	Employees receiving TransitChek	500 at 2 employers (pre-test); 4,000 at 43 employers  (36 in Philadelphia, 4 in Pittsburgh, 3 in Harrisburg)	314 (63%) – pretest; and 386 (16%) – final survey	Voucher	No	No (Assume paid)	Two stages of survey (pretest and final survey).
San Francisco	1994	Metropolitan Transportation Commission (MTC) <sup>15</sup>	Employees receiving Commuter Check	3,600 to 4,500 at 239 employers	1,800 (40–50%)	Voucher	No	No (Assume paid)	Responses were received from 149 employers, with response rates highest from smaller employers. Discrepancies in trip increase figures; see case study for details. Responses broken out by location: urban and suburban.
New York	2004	Transit Center <sup>16</sup>	Random sample of employees	3,050 (# of employers N/A)	N/A	Voucher	No	Yes (But results not separated)	Telephone survey. Survey response rate not provided, but results have a level of confidence of +/- 5%.
New York	1994	Transit Center <sup>14</sup>	Employees receiving TransitChek	8,175 at 50 employers	4,170 (51%)	Voucher	No	No (Assume paid)	Average of about \$45/mo. paid by employer.

(continued on next page)

TABLE 4 (Continued)

Region	Survey Date	Survey Conducted By/For	Who Was Surveyed	Number Surveyed	Surveys Received (Response Rate)	Type of Commuter Benefit	Surveyed Before and after?	Info on Pre-tax or Employer-paid?	Data Issues
New York	1990	Transit Center <sup>14</sup>	Employees receiving TransitChek at Port Authority of NY/NJ	845 at 1 employer	526 (62%)	Voucher	No	No (Assume paid)	Benefit given only to clerical/secretarial staff, not all employees. Average \$15/mo. paid by employer.
New York	1989	Transit Center <sup>14</sup>	Employees receiving TransitChek	4,600 at 193 employers	2,320 (50%)	Voucher	No	No (Assume paid)	None.
Montgomery County, MD	2001	Montgomery County Commuter Services <sup>17</sup>	Employees at worksites participating in FareShare and Super FareShare programs.	N/A, but 94 total employers	1,725 (N/A)	Multiple types possible (stored-value card, monthly pass)	Yes	All employer paid	Surveys were conducted when employers joined the programs; follow-up surveys in 2001 (FareShare) and 2002 (Super FareShare). FareShare worksites get county match up to \$32.50/mo; those in Super FareShare get match of \$64 if they provide at least \$65/mo.

<sup>1</sup> Unpublished data provided by Scott Haywood, VTA.

<sup>2</sup> Lloyd District Transportation Management Association. *2001 Accomplishments*. Available online at [www.1dtma.com/pdf%20files/2001%20survey%20summary.pdf](http://www.1dtma.com/pdf%20files/2001%20survey%20summary.pdf).

<sup>3</sup> Unpublished data provided by Tony Mendoza, Planner IV, Tri-Met, on January 17, 2002, on Transp-TDM listserv. Listserv postings available through [www.cutr.usf.edu/index2.htm](http://www.cutr.usf.edu/index2.htm).

<sup>4</sup> Unpublished data provided by Denver RTD staff.

<sup>5</sup> Howell Research Group. *Eco Pass Effectiveness Study*. Prepared by for Regional Air Quality Council. November 1993. Unpublished study provided by Denver RTD staff.

<sup>6</sup> LDA Consulting, et al. *State of the Commute 2001: Survey Results from the Washington Metropolitan Region*. Prepared for Commuter Connections. Publication Number 22604, July 2002.

<sup>7</sup> General Accounting Office. *Mass Transit: Federal Participation in Transit Benefits Programs*. GAO/RCED-93-163. September 1, 1993.

<sup>8</sup> Brown, J., D. B. Hess, and D. Shoup. "Fare-Free Public Transit at Universities: An Evaluation." *Journal of Planning Education and Research* Vol. 23, pp. 69–82, 2003.

<sup>9</sup> Unpublished data provided by Robert Gibbons, Metro Transit.

<sup>10</sup> Center for Transportation and the Environment. *Evaluation of the Effectiveness of Programs Contained in the Framework for Cooperation and Reduce Traffic Congestion and Improve Air Quality—Phase Three: February 2003 Discount Transit Pass User Survey Final Report*. Prepared for Georgia Department of Transportation. Available online at [www.tdmframework.org/reports/files/FY2002FnlRptAppI.pdf](http://www.tdmframework.org/reports/files/FY2002FnlRptAppI.pdf).

<sup>11</sup> "TransitChek Research 2000, Summary Highlights." Unpublished data provided by Stacy Bartels, Delaware Regional Valley Planning Commission.

<sup>12</sup> "TransitChek User Survey: Summary of Results." Unpublished data provided by Stacy Bartels, Delaware Regional Valley Planning Commission.

<sup>13</sup> One survey was conducted covering worksites in all three of these metropolitan areas in Pennsylvania. Breakdown of the number of employees surveyed at employers in each region not provided.

<sup>14</sup> U.S. Department of Transportation, Federal Transit Administration. *TransitChek in the New York City and Philadelphia Areas*. FTA-MA-26-0006-91-1; DOT-VNTSC-FTA-95-11. October 1995. Available online at [www.fta.dot.gov/library/program/tchek/TransitChek.html](http://www.fta.dot.gov/library/program/tchek/TransitChek.html).

<sup>15</sup> Oram Associates. "Impact of the Bay Area Commuter Check Program: Results of Employee Survey." Prepared for Metropolitan Transportation Commission.

<sup>16</sup> ORC Macro. "Commuter Benefit Impact on Transit Use: A TransitChek Study" (MS PowerPoint presentation). Prepared for TransitCenter, Inc., August 2004. Unpublished study provided by Transit Center staff.

<sup>17</sup> Unpublished data provided by Montgomery County Commuter Services staff.



### Note on Terminology and Measurement

**Commuter benefits recipients:** employees who receive commuter benefits through their employer. At most worksites, employees have to opt to participate; however, under some programs, all employees receive benefits, whether they use them to ride transit or not.

**Transit riders:** employees who use transit. At worksites offering a commuter benefit, transit riders are a subset of commuter benefits recipients (in the case of programs where employees have to opt to participate, all recipients may be transit riders).

**Mode share:** the percentage of all persons using a particular mode (e.g., transit, carpool, or walking) to make a trip. A change in the percent of travelers using a mode is a **mode shift**.

**Percent change in use of a mode:** the percent change shows the increase or decrease in use of a mode, calculated on the basis of starting mode share. For example, an increase in transit mode share from 20 to 22 is a 10-percent increase in transit use (2 divided by 20).

**Change per 100 employees:** In order to provide a consistent way to compare the absolute change in use of a mode, changes are represented in terms of a worksite of 100 employees (equivalent to the percentage point change in mode split). For example, an increase in transit mode share from 20 to 22 percent is a 2-percentage point increase, or an increase of 2 transit riders per 100 employees.

There are other potential limitations of the data as well. The sample size was small in some surveys. Further, there is a potential for bias in the selection of worksites; it is possible that worksites that were surveyed tended to be the more successful worksites in terms of increasing transit use. Finally, there is a potential for bias in survey response; it is possible that more employees who switched to transit were likely to respond. This bias is especially a concern because survey response rates were low—in the 10- to 60-percent range—in most surveys.

Differences in questions among the different survey instruments also mean that results across surveys are not fully comparable. For instance, some surveys asked about the “primary mode of commuting,” whereas others asked whether employees “ride transit.” The responses to these questions may differ because an occasional transit user would probably say “no” to the question of whether he or she uses transit if the question about the primary mode of commuting is asked, but would respond “yes” to the question about whether he or she rides transit. Other surveys ask about commuting behavior over the course of a week to capture variations in transit use more accurately.

Finally, the before and after surveys do not provide information on factors other than the implementation of a transit

benefits program that might be influencing transit use over the period between the two surveys, such as implementation of other employee commute programs (e.g., rideshare matching or a telecommuting program) or changes in employment demographics.

### *Data Sets from Regions with Mandatory CTR Programs*

The second set of data analyzed includes employer trip reduction reports from three regions where certain employers are subject to mandatory CTR programs—Southern California, Tucson (Pima County, Arizona), and Washington State. These data sets provide a wealth of information on individual worksites, including the number of employees at the worksite, worksite location, and commuter programs that are offered (ranging from financial incentives to nonfinancial incentives such as preferential parking and telecommuting). These data sets also provide reported mode share data at various points in time. As a result, these data sets enable more detailed analysis than the surveys conducted by transit agencies and other organizations. Specifically, these data sets allow an assessment of the independent effects of a transit benefits program: those effects that are separate from the effects of other factors that might also be influencing travel behavior.

The data sets are as follows:

- In **Southern California**, all worksites of more than 250 employees are required to implement a CTR program (from 1988 to 1996, the program covered all employers over 100 employees). The Southern California data, obtained from the South Coast Air Quality Management District (SCAQMD), consist of 33,092 total records from 7,626 employer worksites, covering the years 1988 to 2001. Each record represents information from a specific worksite for a specific year, including benefits offered and mode split. There can be multiple records from a specific worksite over several years or several records for a company with multiple worksites.
- In **Tucson (Pima County, Arizona)**, all employers over 100 employees must have trip reduction programs. The Tucson data were obtained from the Pima County Association of Governments and consist of 1,438 total records from 317 company worksites covering the years 1996 to 2001.
- In **Washington State**, the state’s CTR law currently covers employers over 100 employees in nine counties. Data were obtained from the Washington Department of Transportation (DOT) and consist of 2,444 total records from 1,038 company worksites. Data were collected every two years, in 1995, 1997, 1999, and 2001.

In all three data sets, not every worksite is represented in the survey for every year.

The key advantage of the mandatory CTR program data sets is the great level of detail, particularly with regard to the full range of commute programs offered at the worksite. For instance, the trip reduction program data sets show not only that an employer implemented a transit benefits program but also what other programs the employer has in place, as well as any other programs that were implemented or eliminated at the same time. Another advantage is the detailed data on mode shares; the trip reduction data provide information not only on transit use, but also on use of other modes, including driving alone, carpooling, vanpooling, bicycling, walking, and telecommuting. As a result, the data sets provide more detailed information on shifts in travel behavior. Finally, the research team believes the data sets are less likely to be biased toward worksites with successful transit benefits programs because the worksites were not surveyed directly by the transit agencies, and the focus of the programs is on commute trip reduction, not transit ridership.

On the other hand, there are reasons why worksites subject to mandatory CTR programs may not be representative of employers that typically implement transit benefits programs. The worksites subject to mandatory CTR programs each have 100 or more employees (250 or more in Southern California after the late 1990s) whereas anecdotal evidence suggests that in some metropolitan areas small companies have been more likely to offer transit benefits to employees. Moreover, worksites mandated to have trip reduction strategies in place may have different motivations for making the transit benefits program succeed than employers that voluntarily introduce a transit benefits program. Many of the worksites that implemented transit benefits in the mandatory CTR areas had low transit mode shares and were located in suburban areas that may not be well served by transit; in contrast, nationally, it appears that most transit benefits programs are implemented by worksites in downtown areas or other areas well served by transit. Many of the CTR records go back to the early 1990s and therefore may not reflect federal tax law changes, such as the option for employees to pay for their transit expense on a pre-tax basis (first allowed in 1998, after passage of the Transportation Equity Act for the 21st Century, TEA-21), greater tax-free limits (e.g., TEA-21 raised the tax-free limit for transit and vanpool benefits from \$65 per month in 2001 to \$100 per month in 2002), and increased general awareness of transit benefits programs. Finally, the data sets from the three areas also have varying degrees of quality control problems (e.g., dollar values in the same field ranging from pennies to tens of thousands of dollars).

Two approaches were used to analyze the data sets:

- **Regression analysis.** The research team initially performed a regression analysis using the Southern California data set to determine the influence of transit benefits and other financial incentive programs on employee travel behavior. The reported VTR, which represents the number of vehicle trips per 100 employees, was the

dependent variable, with independent variables representing each of the major types of financial incentives and nonfinancial transportation programs that can be offered at a worksite. The goal of this analysis was to identify programs that have a statistically significant effect on VTR. The results, however, did not reveal a statistically significant effect for transit benefits or most other financial incentives, and some incentives showed an unexpected positive sign (signifying that implementing a program actually increases VTR). The lack of significant variables may relate to a lack of several ideal determinants in the regression model and potential problems with the data set, or it could be that none of these incentives has a strong correlation with travel behavior. Results of the regression model are available in Appendix D.

- **Descriptive analysis.** To produce results similar to those provided by the survey data from transit agencies and commuter organizations, the research team conducted a descriptive analysis of the data sets from all three regions, isolating worksite records in which an individual worksite either introduced or eliminated a transit benefit, vanpool benefit, or other financial incentive (such as carpooling incentives and parking cash out). The goal of this analysis was to examine changes in VTR and transit and/or vanpool mode split. Because the data sets were large, there were enough records to examine changes in each of these transit benefits programs. In this analysis, if a worksite implemented a benefit and later eliminated it, or vice versa, the worksite might be represented multiple times.

For transit benefits only, the data records were further broken down. The first and largest set consisted of *all* records in which a worksite implemented a transit benefits program. A second set, a subset of the first, consisted only of worksites that implemented a transit benefits program *without implementing or eliminating any other commute programs* at the same time. The goal of analyzing this “control” subset was to isolate the effects of the transit benefits program from effects that might be occurring because of other programs. In the case of the large Southern California data set, the research team also looked at a third data set: worksites that implemented a transit benefits program in conjunction with supporting benefits (marketing and guaranteed-ride-home).

The analysis approach and results for the mandatory CTR program data are described in more detail in Appendix D.

### **Effects of Transit Benefits Programs on Employee Travel Behavior**

#### *Transit Benefits Increase Transit Ridership in Most Circumstances*

**Transit Ridership Generally Increases 10 Percent or More at Participating Worksites.** The surveys suggest that implementing a transit benefits program typically results in

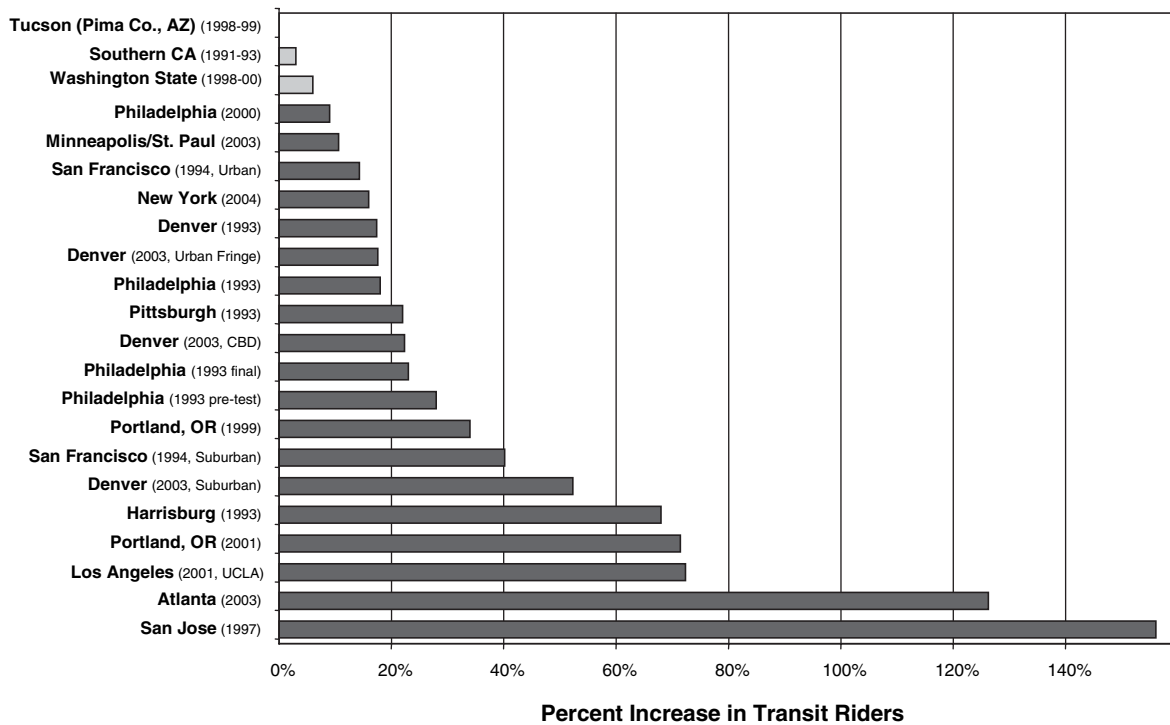
**Understanding the Presentation of Results**

The effects of transit benefits programs are presented from three different perspectives: the change in the number of transit riders per 100 employees, the percent change in transit riders, and the share of transit benefits recipients who are new transit riders. An example of how these effects are related is the following: an increase in transit mode share from 8 to 12 percent is an increase of 4 transit riders per 100 employees (12 minus 8), or a 50 percent increase in transit riders (4 new transit riders divided by 8 at start), and signifies that 33 percent of transit benefits recipients are new to transit (4 out of 12 total transit benefits recipients). These metrics provide different perspectives on the data and are useful because different surveys are framed around these issues.

In all cases, the range of results from the surveys and data sets is reported without calculating an average impact for all regions. This approach was chosen for two reasons: (1) the number of employees and employers in each survey varied considerably, which makes an average not entirely meaningful, and (2) the average is not applicable as a guide for what a “typical” region or employer can expect, as regional situations and individual worksite characteristics vary so widely.

increased employee use of transit. Virtually every survey provided evidence that transit use increased on implementation of a transit benefits program. However, the percentage increase in transit use varied dramatically among surveys, as shown in Figure 6. Note that for some surveys multiple figures were reported, representing different sets of worksites (e.g., CBD, urban, and suburban). Note also that only surveys that were performed before and after the implementation of transit benefits or those surveys that asked about previous commuting behavior are included in Figure 6. Other surveys did not contain sufficient information to determine the percentage change in transit ridership.

More than half of the surveys reported an increase in transit riders between 10 and 40 percent, and nearly one-quarter reported increases of more than 60 percent. Two surveys—one in San Jose in 1997 and one in Atlanta in 2003—suggest that transit ridership more than doubled after a transit benefits program was implemented. In contrast, the data sets from mandatory CTR program areas—Washington State, Southern California, and Tucson (Pima County, Arizona)—indicate very small changes in transit ridership on average, with a very slight decline in Tucson (Pima County, Arizona), and increases of only 3 percent in Southern California and 6 percent in Washington State.



Note: For the three CTR regions, the percentage changes reflect results for all worksites, not for the control group. These are more comparable to the survey results, since the surveys did not control for whether other benefits were implemented. Also, the figure for San Jose reflects the increase in the number of employees who reported riding transit (even occasionally), not the average daily mode share for transit. See Appendix C for details.

Figure 6. Estimated percentage increase in employee transit use at participating worksites.

These differences likely reflect a variety of factors. Generally, the largest percentage gains were in the less transit-intensive regions where starting transit mode shares were relatively low. For example, the 1997 San Jose survey and the 2001 Los Angeles area (UCLA) survey showed some of the highest percent increases in transit ridership (156 percent and 72 percent, respectively) and indicated lower starting transit mode shares (10.7 percent and 7.6 percent, respectively) than most of the other surveys. The smallest percentage gains (found in the mandatory CTR areas) were also associated with generally low initial transit mode share (3.5 percent in Southern California, 4.6 percent in Tucson [Pima County, Arizona], and 14.0 percent in Washington State), but, in these cases, very minimal changes in transit use were found on average.

In areas with relatively low starting transit mode share, moderate increases in the number of transit users can result in substantial percent increases in transit riders. As a result, the surveys with the largest percent increases in transit use did not always correspond to those that saw the largest increase in the number of transit riders (measured per 100 employees offered the benefit).

**There Is a Wide Range in the Number of New Transit Riders per 100 Employees.** More important than the percent increase in transit use is the actual number of new transit riders that can be expected at a particular worksite. Seven surveys conducted by transit agencies or other organizations and the three mandatory CTR program data sets contained mode share data from before and after implemen-

tation of a transit benefits program. According to these surveys, transit mode shares increased by nearly 2 to 17 percentage points on average, meaning that a worksite with 100 employees that offers a transit benefit might expect the equivalent of 2 to 17 employees to switch to riding transit full-time. The data sets from the mandatory CTR program areas, however, reported on average less than 1 new transit rider per 100 employees. Figure 7 shows the average transit mode share reported before and after implementation of the transit benefit in the before and after surveys. Results for each individual worksite varied widely, with some showing no change or a small decline in transit use, and others showing large increases.

**Some Programs Primarily Serve Existing Transit Riders.** The data from the mandatory CTR regions, on average, showed transit benefit programs having little impact on transit use, signifying that, in most cases, the transit benefits program simply served existing transit users. It is important to note, however, that a transit benefits program that does not increase transit ridership, may be viewed as successful in other ways. For example, the increased convenience of receiving transit passes at the workplace and the lower costs of transit use to employees might help to support retention of existing riders and increased satisfaction with transit. The program also might be supporting increased off-peak use of transit by existing transit commuters (not captured in most surveys, which focus on commute travel). However, these effects could not be quantified in this study.

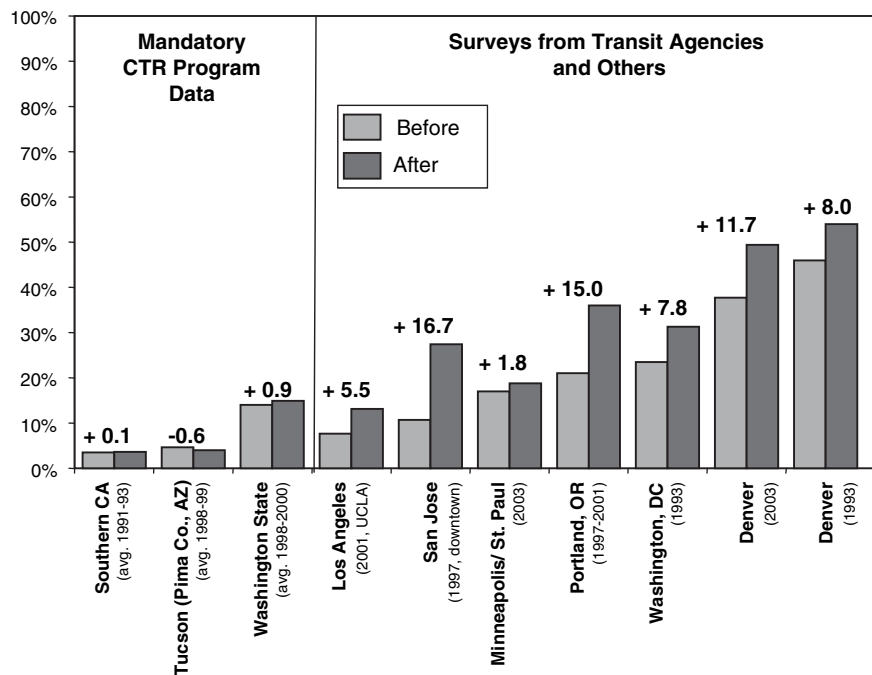


Figure 7. Average transit mode shares before and after implementation of a transit benefits program.



The research team explored the CTR data further by examining a “control” group of worksites that implemented a transit benefits program with no change in the *types* of other commute programs—like reported availability of rideshare matching and telecommuting—being offered (the employer still might have made a change in the level of incentive or manner in which a program was implemented. This analysis simply looked at worksites that did not change their reporting of whether or not a program was offered). The purpose of this analysis was to examine the independent effects of the transit benefit.

All three CTR regions showed very small changes in transit use on average for the “control” groups, and, in some cases, there were slight declines in transit use; these effects were the opposite of what the research team expected. The Southern California control group contained 57 records, and showed, on average, a decline in transit mode share from 4.5 to 3.4 percent. The Tucson (Pima County, Arizona) and Washington State control groups also showed small changes: an increase from 3.6 to 4.5 percent in Tucson (Pima County, Arizona) (sample size: three worksite records), and a decrease from 0.5 to 0.1 percent in Washington State (sample size: one worksite record).

In addition, the research team looked at worksites in the three CTR regions where a transit benefits program was eliminated with no change in other commute programs being offered, and the team similarly found, on average, small changes in the number of transit trips per 100 employees. Although transit mode share declined from 4.5 to 3.4 percent among the Southern California worksites that *added* a transit benefit with no change in other programs being offered, transit mode share declined from 6.0 to 5.2 percent among Southern California worksites that *eliminated* a transit benefit with no changes in other programs being offered. See Appendix D for more detail on these effects.

There are several potential reasons why the CTR data showed much smaller effects than most of the other surveys. Differences in worksite characteristics may be an important factor. Several explanations that relate to worksite characteristics and program design were identified based on conversations with staff from agencies supplying the mandatory CTR program data, including differences in transit availability, employer payment toward the transit benefit, and the range of available worksite commuting programs (8). (These factors are documented below in the section on “Factors Affecting Employee Travel Behavior Response.”) Moreover, differences in survey design may also be a factor. For instance, in the mandatory CTR programs, an employer makes a commitment to implement transportation programs in its trip reduction plan, but there is the possibility that the employer did not carry through on its commitment, particularly when there are multiple years between trip reduction reports. The three data sets from the mandatory CTR program areas also have varying degrees of quality control problems, and the surveys that focus on transit benefits programs also have several potential

problems, including low response rates in many surveys, which could indicate that responses are biased toward those individuals who changed their travel behavior.

**Individual Worksites Within a Region Differ.** In addition to recognizing the differences in results among the surveys, it is important to note that results for individual worksites varied even more widely. All of the information presented above represents the average impact found in each survey and is not representative of all worksites in a given region. For instance, data collected from Denver in 2003, which included before and after mode transit share data for employers that implemented an Eco Pass, show that average transit mode share increased from approximately 37.7 to 49.4 percent, implying that transit use typically increased by about 11.7 new riders per 100 employees. The figures were calculated using unpublished data provided as of April 2003 by the Denver Regional Transportation District for 37 employers and were developed by weighting mode shares for individual employers by the number of employees at the worksite (for example, mode share at a worksite with 100 employees is weighted 10 times as much as a worksite with 10 employees). As shown in Figure 8, there was a wide range of mode share changes among the individual worksites, from a small decrease to increases of over 30 percentage points.

Among the majority of employers that reported an increase in transit use, the increases in transit share ranged from 1 to 45 percentage points, not counting one small employer (with three employees) that reported going from zero to 100 percent of employees using transit. Among the three largest employers in the survey (each with over 1,000 employees), transit share increased by 11 percentage points (from 13 to 24 percent) at a suburban university campus, by 10 percentage points (from 77 to 87 percent) at a downtown financial services company, and by 6 percentage points (from 23 to 29 percent) at a federal government agency in the suburbs. One mid-sized employer (with over 400 employees) in the CBD saw transit share increase by 34 percentage points (from 65 to 99 percent), showing that larger increases are possible.

All of the Denver worksites that reported a decrease in transit riders were small employers (each with 38 employees or less) where differences in survey response rate between the before and after surveys could have been responsible for the reduction. All of the worksites that reported no change were small employers with 100 percent of employees reporting using transit, so no gains in transit use were possible.

Another example of the wide range of results among worksites can be seen in the information provided by Metro Transit in Minneapolis on the six largest employers enrolled in the Metropass program (the information is based on surveys of ridership before and after implementation). Among these six employers, each of which had over 2,700 employees, the weighted average transit mode share increased by 1.8 percentage points, from 17.0 to 18.8 percent. However, among individual employers, there were considerable differences, as

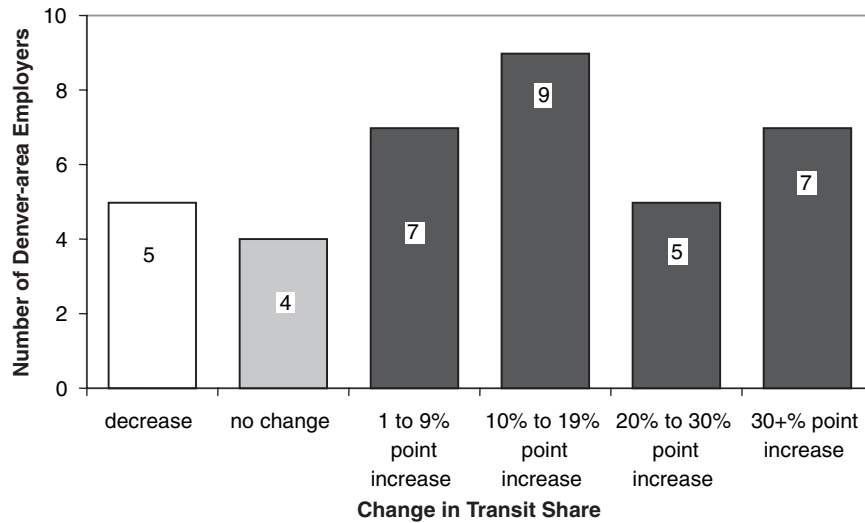


Figure 8. Number of Denver-area employers by change in transit share (based on RTD survey data as of April 2003).

shown in Table 5. In general, the employers with the lower starting transit mode shares (approximately 11 percent and lower) saw little change in transit use; the employer with about 30 percent of employees taking transit saw a small increase; and the employer with the largest starting transit share saw a relatively large increase—nearly 12 new transit riders per 100 employees.

The Southern California mandatory CTR data set is another case where the average impact was small (about 0.1 new transit riders per 100 employees) but there was a wide variation in effect among worksites. As shown in Figure 9, about 1 out of 20 worksites (50 out of 943 worksites) in the Southern California data set saw transit use increase by 5 or more transit riders per 100 employees after implementation of a transit benefits program. Overall, about 44 percent of worksites saw an increase in transit mode share, 40 percent saw a decline in transit mode share, and 16 percent saw no change. Initial mode shares by groups are graphed in the U-shaped line in Figure 9. The largest changes in transit mode share—increases or decreases of over five employees per worksite—were associated with higher initial mode shares. Worksites with no change had an average initial transit mode share of zero. Worksites in

Tucson (Pima County, Arizona) and Washington State (not shown in Figure 9) showed a similar pattern: no or very low transit ridership before the introduction of benefits was associated with little or no change in ridership, and higher mode shares were associated with larger increases or decreases. See Appendix D for more detail.

**Employee Turnover and Other External Factors Affect Travel Behavior as Well.** As Figure 9 illustrates, a large number of worksites in the Southern California data set actually saw a decrease in transit mode share after implementation of a transit benefit. The same was true for the Tucson (Pima County, Arizona) and Washington State data sets. Other data sets that included individual worksite data, such as the data sets of Eco Pass employers in Denver and of Metropass employers in Minneapolis, also showed that some employers saw a decrease in transit mode share. There is no reason to believe that implementing a transit benefits program should result in a reduction in transit use, all else being equal. It seems likely that other factors must have been responsible for the reductions in transit use and may be partially responsible for some of the increase as well.

TABLE 5 Transit mode shares for the six largest employers participating in Metropass in the Minneapolis/St. Paul Area

Number of Employees	Transit Mode Share		Increase in Transit Riders per 100 Employees	Increase in Transit Ridership
	Before	After		
5,535	56.2%	68.0%	11.8	21.0%
2,712	30.0%	32.0%	2.0	6.6%
14,123	10.6%	10.0%	-0.6	-3.0%
4,942	7.7%	8.0%	0.3	4.0%
5,382	6.8%	7.0%	0.2	2.4%
4,815	4.0%	4.0%	0	-1.0%



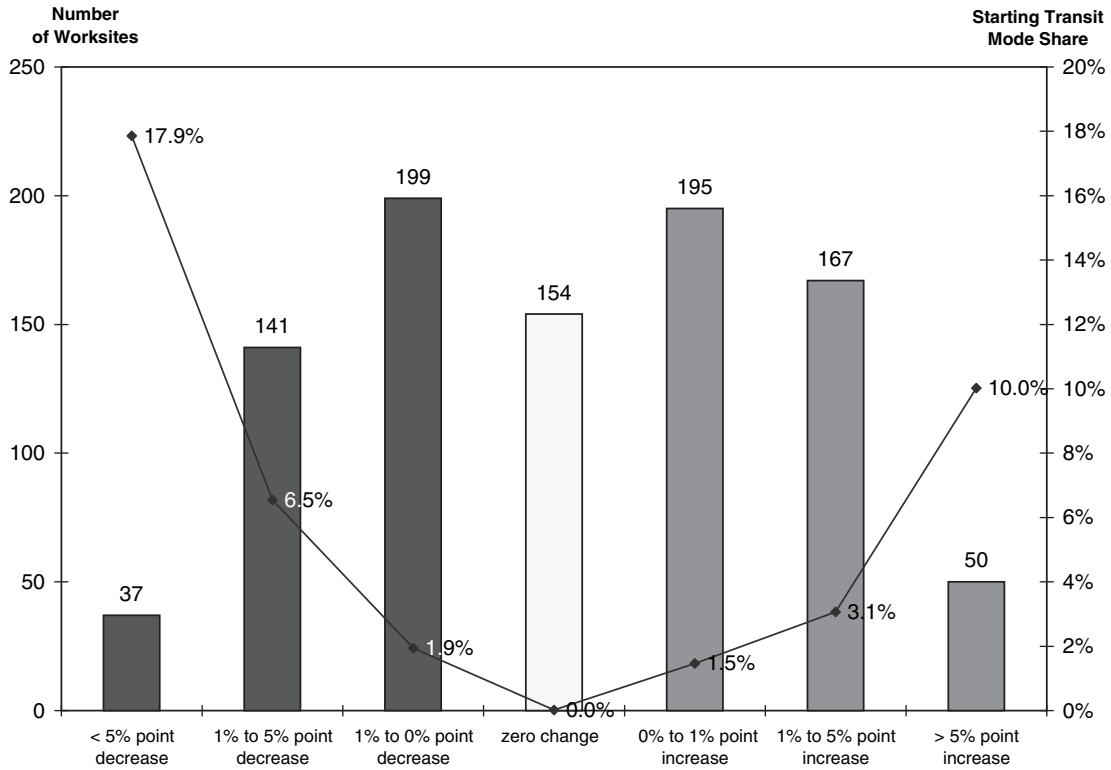


Figure 9. Number of Southern California worksites by change in transit share and initial transit mode share after implementing a transit benefit.

In any before and after survey, there is the potential for a wide range of factors to influence the results, such as changes in the worksite employment profile (for example, if the company hires a new set of employees or lays off employees between the “before” survey and the “after” survey), changes in transit services at the worksite (for example, if the transit agency implemented additional services or reduced service levels), or changes in transit fares or parking prices. These factors may be particularly important in influencing results for any surveys that are conducted many years apart. Moreover, if employee turnover or other factors might result in changes in mode share of plus or minus a few percentage points for any given mode, these changes may be very notable when starting mode share is very low. For example, if a worksite of 100 employees has 3 transit riders, and 1 rider leaves the company to be replaced by an employee who drives, the overall transit mode share declines from 3 to 2 percent, resulting in a 33 percent reduction in transit use.

In the Southern California trip reduction program data, 57 worksites that implemented a transit benefit *without implementing or removing any other transportation benefits* showed on average no impact in increasing transit ridership; in fact, on average, there was 1 fewer transit rider per 100 employees. Of these 57 worksites, over half (32) showed positive or negative differences within 1 percentage point, which may not reflect any real behavior change. Six worksites reported substantial decreases in transit ridership (a reduction of more than 5 tran-

sit riders per 100 employees)—the reverse of what would be expected, all else being equal. Of these six worksites, two reported substantial increases in employment (one reported a more than 35-percent increase and the other reported a near doubling in employment) and one reported a substantial reduction in employment (a reduction of over 20 percent). Of the others, two worksites had trip reports several years apart, which may mean that the worksite did not continue to offer the transit benefit by the time the mode share impact was measured, although this is unknown. As a result, it appears that employee turnover and other factors may explain the large drop in transit use. External factors similarly might explain some of the increases in transit use that occurred at other worksites.

**Overall Findings on Impacts on Transit Use.** Overall, the results from the various surveys suggest that a transit benefits program can produce increased transit use in some circumstances as well as an increase in new transit riders. It is important to recognize the context within which a transit benefits program is implemented. Many factors can produce a change in mode share and VTR. A transit agency can affect or control some of these (e.g., introduction of an incentive and changes in transit services), but not others (e.g., changes in gas prices and employee turnover). Various factors can affect employee travel behavior, regardless of whether or not a transit benefits program is implemented.

*Transit Benefits Programs Attract New Transit Riders and Increase Use by Existing Riders*

**Transit Benefits Programs Generally Attract Some New Transit Riders.** As discussed above, in many regions transit benefits program result in new transit riders. Another way to examine transit benefits programs is to look at the portion of transit benefits recipients who are new riders. Based on surveys conducted by transit agencies and others, typically 10 to 40 percent of transit benefits recipients were new to transit, as shown in Figure 10. (Figure 10 includes only those surveys with information on the percentage of new riders.)

The areas with large existing transit mode share, such as Philadelphia and New York, tended to have the largest share of recipients who were existing transit riders. The data suggest that even in very transit-intensive areas, new riders can still be added. Areas with relatively low starting mode share or very large increases in transit use, like San Jose and Atlanta, saw the largest portion of recipients who were new transit riders. In the mandatory CTR program areas, very little new transit ridership was reported, and so a very small share of transit benefits recipients were new to transit: approximately 6 percent in Southern California and 3 percent in Washington State. (The data from Tucson [Pima County, Arizona] showed no increase in transit use on average after implementing a transit benefit).

Although the data from a 2001 State of the Commute Survey in the Washington, DC, area is not displayed in Figure 10

because the wording of the question leaves room for other factors, results of this survey indicated that 48 percent of Metrochek users were “influenced by” receiving the benefit, suggesting that up to 48 percent of Metrochek recipients are new riders. This figure is at the high end of the range show in Figure 10, but may reflect the fact that the tax-free limit rose to \$100, and many Metrochek recipients are federal employees who receive fully paid benefits. Alternatively, a substantial portion of the Metrochek users who say they were “influenced by” the benefit could be existing riders who use transit more frequently.

**Increased Transit Use Also Comes from Existing Transit Riders.** Because transit benefits programs often result in increased transit use, transit agencies and others are interested in examining which employees increase their transit use and what the patterns of increased use are. As part of this overall question, transit agencies and others are interested in discovering the extent to which increases in transit use are due to new transit riders or to existing transit riders who begin riding more often.

Several surveys conducted by transit agencies and other organizations asked transit benefits recipients whether they rode transit more often after receiving the benefit. (There were no data addressing this issue from the three mandatory CTR regions.) As shown in Table 6, up to 35 percent of transit benefits recipients reported increasing their use of transit; this

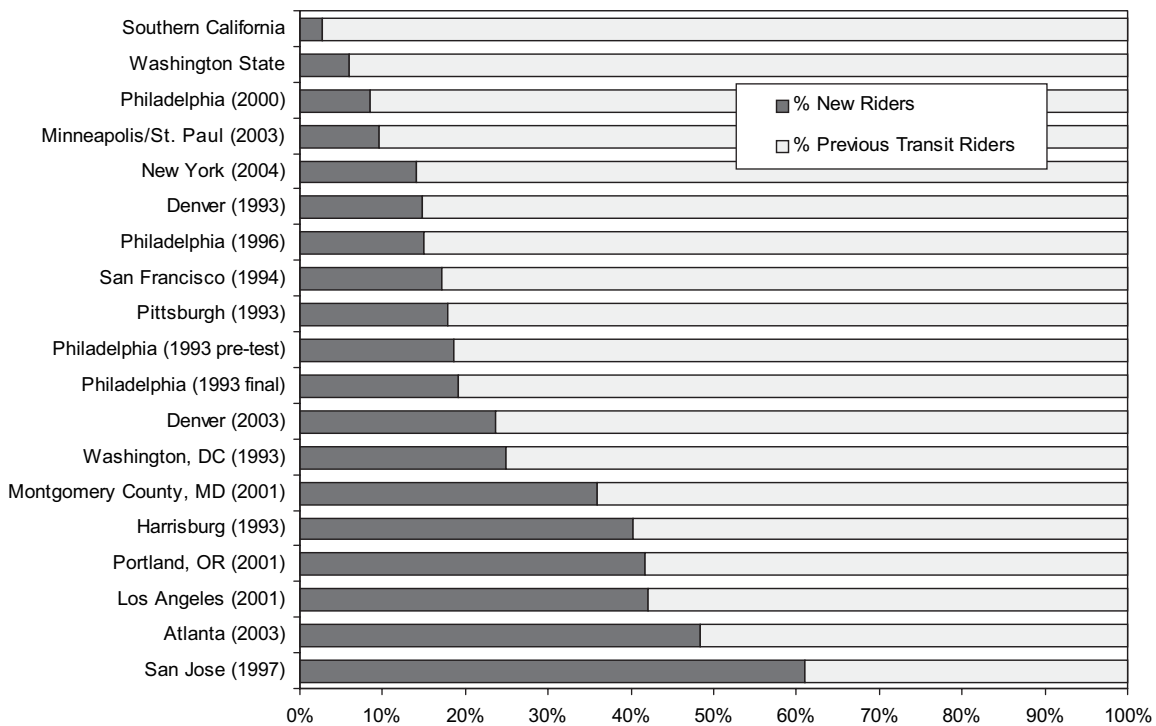


Figure 10. Percentage of transit benefits recipients who are new transit riders, across transit agency and other surveys.

**TABLE 6** Changes in frequency of transit ridership

Region	Survey Date	% of All Recipients Who Increased Transit Ridership	% of All Recipients Who Were New to Transit	% of All Recipients Who Were Previous Riders and Increased Frequency
Philadelphia	2000	35%	8.5%	26.5%
Philadelphia	1996	32%	23%	9%
Denver	1993	19.4%	15%	4.4%

includes both previous riders who increased their frequency of use as well as new riders.

#### *Transit Benefits Recipients Ride More Often for Commute and Noncommute Purposes*

An important question for transit agencies and others is whether transit benefits programs result in increases in transit use for both commute and noncommute trips. This question is important because many transit agencies are very interested in increasing off-peak ridership in order to utilize existing capacity, particularly if the transit agency is at or near capacity during peak commute hours. One of the advantages of having employees get monthly or annual passes from their employers is that the pass can be used for any trip—weekday peak, weekday off-peak, and weekend.

Although most studies of transit benefits' impacts focus on commute travel, the four New York area surveys and the San Francisco survey asked about increases in transit ridership for both commute and noncommute trips. As shown in Table 7, all of these surveys suggest that employees took more transit trips for both purposes.

It is notable that of the five surveys listed in Table 7, three showed increases in noncommute trips that were nearly as high as the increases in commute trips, and two surveys—New York 2004 and New York 1994—showed greater increases in noncommute trips. It is not clear to what extent these patterns hold in other regions; after all, New York and San Francisco have very high transit ridership. In these two regions, a large portion of transit benefits recipients were already using transit for commuting, and employees may have been more likely to consider transit as an option for other trips. In many smaller metropolitan areas, transit service is infrequent during off-

peak periods and may not be as likely to attract as many new riders. Still, these figures suggest that in areas with high transit ridership, transit benefits programs can be effective in encouraging increased transit use, and some of the increased use could be for noncommute trips.

Six surveys asked specific questions about the number of new trips taken by people who reported increasing their transit use. Table 8 provides a summary of the average number of new transit trips per week per employee receiving a transit benefit in these six surveys.

Most of the surveys show an increase in transit trips for commute and noncommute purposes; however, they also show a wide range in average number of new transit trips—from 0.42 to 3.24 new transit trips per week. The lower increases tended to be in the New York region. Because the New York region tends to have far higher transit ridership than the rest of the country, we would not expect ridership to increase as much with the addition of a transit benefit. Also, in the 1989 and 1990 surveys, the average commuter benefit level was \$15 per month, whereas in the 1994 survey, the average benefit was \$45 per month. Thus, the larger increase in average number of new transit trips in the 1994 survey may be due to the higher level of benefit received.

Note that these figures represent the average among all transit benefits recipients, not just the recipients reporting increasing their transit use. Because the number of recipients reporting increased transit use makes up less than one-third of all recipients in most cases (as shown earlier in Table 6), among the people who do increase their transit use, the actual number of new trips taken per week is several times larger (e.g., if one-third of employees reported increasing their transit use, and the average number of new transit trips per week per recipient is 0.42, this means that people who increased their use of transit typically added about 1.26 new transit trips per week [0.42 trips/week among all recipients  $\times$  3]).

**TABLE 7** Changes in frequency of transit ridership for commute and noncommute trips

Region	Survey Date	% of All Recipients Who Increased Their Transit Ridership	
		Commute	Noncommute
San Francisco	1994	34%	29%
New York	2004	10%	Over 24%
New York	1990	22.7%	21.8%
New York	1989	16.5%	14.0%
New York	1994	11.0%	15.0%

#### *Transit Benefits Programs Reduce Vehicle Travel*

**In Most Cases, the Majority of New Transit Riders Previously Drove Alone to Work.** Where did new transit riders come from? Of the many transit agency surveys and CTR data sets, 12 provided information on the percent of transit benefits recipients who are new riders and previous SOV commuters. Just over half of these surveys found that between 90 and 100 percent of *new* transit riders were previous SOV com-

**TABLE 8 Increase in number of transit trips, average across all transit benefits recipients**

Region	Survey Date	Avg. # of Transit Trips/Week		Avg. # of New Transit Trips/Week		
		Before	After	Commute	Noncommute	Total
New York	1990	–	–	0.28	0.14	0.42
New York	1989	–	–	0.31	0.14	0.45
New York	1994	–	–	0.32	0.44	0.76
Denver	1993	6.6	7.8	1.20	–	–
Philadelphia	1993	7.8	10.3	–	–	2.50
San Francisco	1994	–	–	2.07	1.17	3.24

Dash = not available.

muters, as shown in Figure 11 (note that in Figure 11, survey results from one survey conducted in Philadelphia, Pittsburgh, and Harrisburg are reported separately, but there was a small sample in each individual area). The Los Angeles survey is a somewhat unique case because it covered only one employer, UCLA, and the transit benefit provided was a universal pass on the Santa Monica Municipal Bus Line. Presumably, many of the people taking advantage of the transit benefit lived fairly close to campus and did not drive alone because of the parking shortage on campus. At UCLA, the drive-alone share was only 46 percent before the introduction of the pass, which helps to explain why only 31 percent of new transit riders previously commuted by SOV.

Based on the surveys in Figure 11, which found that transit ridership increased by 2 to 17 riders per 100 employees and more than half of new transit riders previously commuted by SOV, one could anticipate a reduction of about 1 to 9 SOV

users per 100 employees at worksites that implement a transit benefits program.

**Driving to Work Typically Goes Down.** Data from surveys with mode share before and after implementation of a transit benefit confirmed that SOV commute mode shares had fallen, as shown in Table 9. For three of the surveyed regions, SOV commuting declined by at least 20 percent. In the Los Angeles area survey (UCLA), the share of drive-alone commuters for transit service area employees fell from 46 to 42 percent; however, carpooling/vanpooling declined more dramatically, indicating that more of the new transit riders likely came from carpools or vanpools rather than SOVs. In the three mandatory CTR regions, SOV commuting, as well as carpooling and vanpooling, remained relatively stable on average after the introduction of transit benefits.

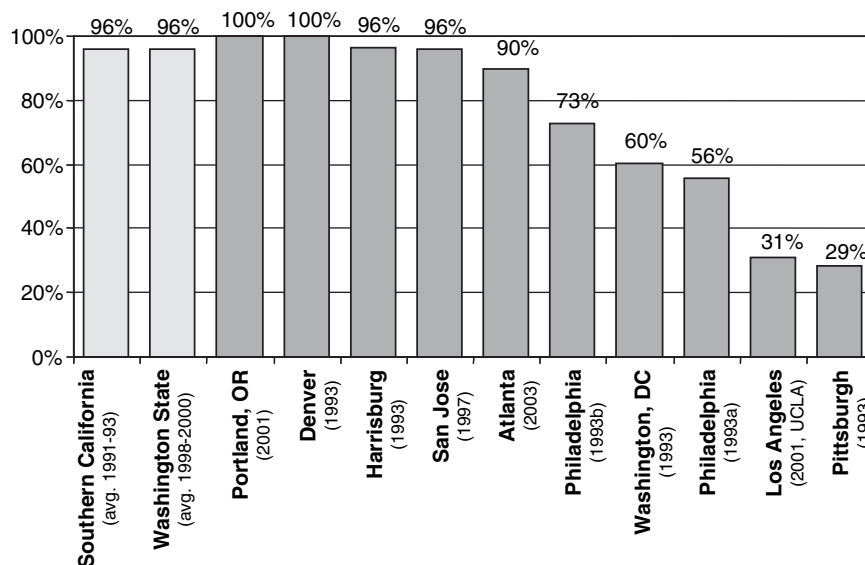


Figure 11. Percent of new transit riders who previously commuted by SOV.

**TABLE 9 Changes in SOV and car/vanpooling mode shares**

Region	Year	SOV Mode Split		Change per 100 Employees	% Change	Carpool/Vanpool Split		Change per 100 Employees	% Change
		Before	After			Before	After		
San Jose	1997	75%	60%	-15	-20%	-	-	-	-
Portland, OR	1997-2001	60%	45%	-15	-25%	16.0%	10.0%	-6	-37.5%
Denver	1993	40%	32%	-8	-20%	-	-	-	-
Los Angeles <sup>1</sup>	2001	46%	42%	-4	-9%	16.0%	9.0%	-7	-44.0%
Southern CA <sup>2</sup>	Avg. 1992-1994	70%	68%	-2	-3%	20.6%	22.3%	1.7	8.3%
Tucson <sup>2</sup>	Avg. 1998-1999	76%	78%	2	3%	13.3%	12.8%	0.5	3.8%
Wash. State <sup>2</sup>	Avg. 1998-2000	65%	64%	-1	-2%	16.0%	16.0%	0	0%

Dash = not available.

<sup>1</sup> For Los Angeles (2001), calculations are based exclusively on the respondents living in the service area for the transit provider because overall figures were not reported.

<sup>2</sup> For the three mandatory CTR data sets, the analysis results are reported for all worksites over the entire data set that implemented a transit benefits program regardless of changes in other programs. The results for worksites that implemented a transit benefits program with no changes in the types of other programs being offered were relatively similar.

The average impact, however, can mask wide variation among individual worksites. For example, in the Southern California data set of worksites subject to mandatory CTR programs, VTR went down on average from 80.3 to 79.1 after implementation of a transit benefits program. Without controlling for the introduction or removal of other incentives, about 58 percent of the worksites in Southern California reduced their VTR following the introduction of a transit benefits program, as shown in Figure 12. Nearly one-quarter (over 200 out of the 943 worksites) saw a reduction of more than 5 vehicle trips per 100 employees. All worksites either increased or decreased their VTR; there were none with zero change.

The worksites that saw an increase in transit use after implementing a transit benefit nearly always saw a reduction in VTR. Overall, the worksites with the largest increases in transit share tended to see the largest reductions in VTR, as shown in Table 10.

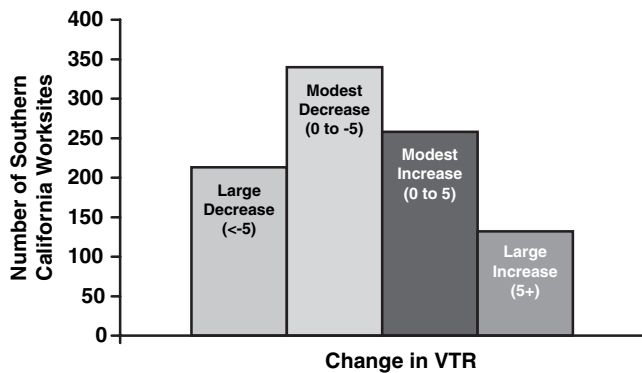


Figure 12. Number of Southern California worksites that implemented a transit benefit, by change in VTR.

**Factors Affecting Employee Travel Behavior Response**

As discussed in the previous section, in most regions transit ridership increased when transit benefits were introduced, but transit use did not increase in all circumstances for individual worksites. Most notably, the worksites in mandatory CTR areas on average showed considerably smaller impacts than other worksites surveyed by transit agencies and other organizations. A wide range of results have been reported, and various factors affect the level of impact.

Transit agencies, commuter organizations, and others who promote transit benefits programs need to understand the factors that influence travel behavior response in order to better target limited marketing resources to worksites that can see the most substantial impacts, to encourage practices that support transit use, and to better be able to gauge expected reductions in parking demand and traffic.

Although data are limited, factors that appear to have the largest impact on employee travel behavior in response to receiving a transit benefit include the following:

- **Location and transit availability.** Urban areas show greater overall increases in transit use; suburban areas with adequate transit services often show greater percentage increases. No change in transit use may be expected in suburban areas with very limited transit services.
- **Level of employer payment.** Employer-paid transit benefits show greater increases than pre-tax benefits, but the impact of the actual dollar amount paid by the employer is inconclusive.
- **Other worksite commute programs.** Employers who implement transit benefits programs in conjunction with supporting programs, like marketing and guaranteed-ride-home, see greater increases in ridership than those



**TABLE 10** Change in VTR broken down by change in transit mode share at Southern California worksites implementing a transit benefit

Change in Transit Mode Share	Number of Worksites	Average Change in Transit Mode Share	Average Change in VTR
> 5 point decrease	37	-9.3%	6.1
1 to 5 point decrease	141	-2.0%	2.9
< 1 point decrease	199	-0.3%	-1.0
No change	154	0.0%	-1.7
< 1 point increase	195	0.4%	-2.6
1 to 5 point increase	167	2.2%	-3.4
> 5 point increase	50	8.0%	-6.5

who simply implement the transit benefit by itself. Worksites that offer a large number of competing benefits are more likely to see smaller impacts on transit use.

Although the type of transit benefits program offered by the transit agency (e.g., monthly pass, universal pass, or voucher) and the availability of free or subsidized parking at the worksite may affect employee travel behavior response as well, insufficient data were available to analyze their effects. However, parking pricing is likely correlated with measures of worksite location and transit availability (e.g., suburban areas with limited transit service are most likely to offer free parking).

#### *Largest Increases in Transit Use Typically Occur in Urban Locations*

An important factor in increasing transit use is the availability of transit services. Transit services tend to be most concentrated in downtown areas, and worksites in these areas tend to have higher starting transit mode shares than worksites that are not as well served by transit. As a result, it is somewhat difficult to separate out the roles of location, transit availability, existing transit ridership, and parking price in affecting employee travel behavior.

Only two surveys, Denver (2003) and San Francisco (1994), provided information on the impacts of transit benefits programs by geographic location within the region. Both studies indicate that there is strong potential for ridership growth in response to transit benefits in *both* urban and suburban areas. Both surveys showed a much more substantial *percentage* increase in transit ridership in suburban areas as compared with downtown/CBD locations; however, both surveys also suggest that a larger *absolute number* of new transit riders (per 100 employees) occurred in the downtown/CBD areas.

The Denver RTD survey provides the most detailed data, tracking employer location based on three different service level areas (SLA): SLA A, well outside the Denver CBD, represents suburban areas; SLA B, just outside the Denver CBD and including the Boulder CBD, represents urban areas, and

SLA C represents the Denver CBD. As shown in Table 11, in the Denver area, the CBD worksites that implemented Eco Pass saw an average of approximately 16 new transit riders per 100 employees, for a 22-percent increase in transit use; however, the suburban worksites saw an average of approximately 9 new transit riders per 100 employees, representing more than a 50-percent increase in transit use.

This difference in percentage change and absolute increase in transit riders is not necessarily surprising because downtown areas have the best transit services, and it may be possible for greater numbers of nonriders to switch to transit. The big difference is the starting mode shares—the very low starting transit mode share in suburban areas means that comparable increases in transit ridership show up as very large percentage gains. It is also worth noting that these figures reflect *occasional* ridership, not *daily* ridership, as they include all Eco Pass users, regardless of the frequency of their ridership. Employees who ride transit even once per week are included. A typical daily mode split would probably show somewhat lower figures.

The 1994 San Francisco Commuter Check survey also found that suburban recipients showed greater percentage increases in transit ridership than their urban counterparts did, which may stem from the fact that existing transit mode share in suburban areas is low. The suburban areas saw a slightly larger increase in the average number of new transit trips per recipient (see Table 11); however, the suburban worksites likely had a much lower share of employees participating in Commuter Check than the urban worksites, so the actual number of new transit trips per 100 employees would be higher in the urban area.

Of course, at suburban worksites with little or no transit service, introducing transit benefits may have little or no impact on employee transit ridership, and worksite transit availability may be an important reason that the data from mandatory CTR programs showed little or no change in transit use on average. Employers seldom implement transit benefits unless they have reasonably good transit access and/or a contingency of existing transit riders who can take advantage of the benefit; these characteristics often need to be in place in order for the employer to see value to implementing the benefit program



**TABLE 11 Change in transit ridership by location—Denver RTD and San Francisco surveys**

Location	Transit Mode Split			% Increase in Number of Riders	% of All Recipients Who Are New Riders	% All Recipients Who Increased Their Transit Ridership	# New Trips/Week
	Before	After	Increase per 100 Employees				
<b>Denver (2003)</b>							
SLA C (CBD)	72.5%	88.7%	16.2	22.2%	18.2%	–	–
SLA B (Urban Fringe)	63.0%	74.1%	11.1	17.6%	15.0%	–	–
SLA A (Suburban)	17.4%	26.5%	9.1	52.7%	34.5%	–	–
Average (All Employers) <sup>1</sup>	37.7%	49.4%	11.7	31%	23.6%	–	–
<b>San Francisco (1994)</b>							
Urban	–	–	–	14%	13%	25%	3.03
Suburban	–	–	–	40%	29%	48%	3.74
Average (All Employers) <sup>1</sup>	–	–	–	21%	17%	31%	3.24

Dash = not available.

<sup>1</sup> The average is calculated on the basis of data for all employers; because there are different numbers of employers in each category, the average is weighted towards the larger categories.

(for more information on factors that affect an employer’s likelihood of implementing a transit benefits program, see *TCRP Report 87: Strategies for Increasing the Effectiveness of Commuter Benefits Programs [1]*). However, in regions with mandatory CTR programs, employers sometimes implement benefit programs to demonstrate a “good faith” commitment toward reducing vehicle trips, even in cases where the benefit program may not be well matched for the worksite. Staff from SCAQMD, in particular, noted that a number of employers with little or no transit access developed transit benefits programs to show an effort toward trip reduction goals, but these efforts would not be expected to succeed. Moreover, most of the trip reduction program data analyzed for this study was from the early 1990s, a time when there were considerably fewer transit possibilities available to employees than currently. Staff at the Pima County Association of Governments noted similar issues.

The worksites that implemented transit benefits programs in the mandatory CTR program areas were primarily those with very low starting transit ridership (less than 5 percent transit mode share), which is not the key market for transit benefits programs. In the cases of the Southern California and Tucson (Pima County, Arizona) mandatory CTR data, average starting transit mode shares were 3.5 percent and 4.6 percent, respectively. These mode shares likely reflect locations that are not conducive to transit; for example, worksites served by a limited number of transit lines and/or infrequent service, where carpooling, vanpooling, or flexible work arrangements

tend to be more viable options. The Southern California trip reduction records show that of 943 worksites that implemented a transit benefits program, only 32 were located in downtown Los Angeles; the rest were in more suburban locations (of the 57 worksites that implemented a transit benefits program with no other changes in the types of programs being offered, only one was located downtown).

The CTR areas saw *on average* very little increase in transit use, which suggests that in circumstances with very limited transit service, it is difficult to achieve increases in transit use. In cases where transit services are limited, large increases in transit use are unlikely. On the other hand, in cases where the worksite is well suited to transit, implementing a transit benefit can result in substantial increases in transit use. As noted earlier, the CTR data from Southern California suggested that the worksites that had little or no change in transit use after implementation of a transit benefit were the ones that had no, or very few, existing transit riders, whereas those that had substantial increases were those with the highest starting transit mode shares.

#### *Employer-Paid Transit Benefits Increase Transit Ridership More than Employee-Paid Pre-Tax Benefits*

Very little research has been conducted on differences in the effects of employer-paid and employee-paid, pre-tax pro-

grams on traveler response. Even though employee-paid, pre-tax programs can result in tax savings, there are reasons to believe that employer-paid programs are more effective in encouraging increased transit use. Notably, employer-paid programs are easier for employees to understand and can be easier to access, particularly if the employer provides transit passes to all employees (such as through use of a universal pass). Employee-paid programs require enough of a commitment to transit for the employee to set aside his or her own income on a pre-tax basis; the employee actually receives less money in his or her paycheck but receives the convenience of getting a transit pass from the employer and saves taxes. As a result, it is expected that employee-paid programs might support increased use of transit by existing transit riders, whereas employer-paid programs might do a better job of encouraging new transit riders.

The 2004 survey of commuters in the New York metropolitan area asked current drive-alone commuters if they would switch to transit at various hypothetical benefit levels. At a proposed \$50 employer-paid benefit per month, 40 percent of drive-alone commuters said they would switch to transit. At a proposed tax savings of \$33 per month from a pre-tax benefit program (which requires reserving \$100 per month on a pre-tax basis), 37 percent of drive-alone commuters said they would switch to transit. The differences in these figures are negligible, but may reflect that the survey respondents were focusing on the dollar savings given a hypothetical situation. In a real-world setting, other factors come into play, such as whether employees understand how much they will save in taxes through a pre-tax program.

Only two surveys contained real-world information on whether the transit benefits provided to employees are employer-paid or pre-tax: Philadelphia (2000) and Portland (1999). (The reports from the mandatory CTR regions did not track this. The pre-tax option became available only in 1998; all of the surveys conducted prior to that date reflect only employer-paid benefits, and several of the later surveys also include only employer-paid benefits. The Los Angeles (2001) survey of UCLA's BruinGo program and the Montgomery County, Maryland (2001) survey of worksites participating in the county's programs (FareShare and SuperFareShare)

include only employer-paid commuter benefits). The 2000 Philadelphia survey compared the percentage of transit benefits recipients whose employers paid the transit benefit with the percentage of transit benefit recipients whose employers offered employee-paid, pre-tax transit benefits in three categories: benefits recipients who increased their transit ridership, benefits recipients who were new transit riders, and benefits recipients who increased the number of transit trips they took per week. The 1999 Portland survey examined transit ridership increases and compiled results based on whether the employer paid. As shown in Table 12, for each of these measures, an employer-paid transit benefit produced a greater increase in transit ridership than a pre-tax benefit by a fairly substantial percentage.

Notably, in the Philadelphia (2000) study, over three times as many employees reported being new transit riders with the employer-paid benefit (13.2 percent) than those employees with employee-paid pre-tax (3.8 percent). These figures imply that employer-paid transit benefits can attract more new transit riders, although the survey does not report on several other factors that may also influence the results, such as the location of the worksites or starting mode shares. The survey also does not report whether those employees shifted from SOV commuting or another mode and does not explain the difference between increasing "transit ridership" and increasing the "number of transit trips per week."

Transit ridership increased among employers with both employer-paid and employee-paid, pre-tax benefits recipients in the Portland (1999) survey, but the increase was greater among employers with employer-paid benefits. Much of the increase among employee-paid, pre-tax benefits recipients may be due to occasional transit riders who set aside money on a pre-tax basis and, as a consequence, ride more frequently, rather than people who are totally new to transit; however, no information is available to confirm this.

#### *Increased Employer Payment May Have Larger Impact—Data Are Inconclusive*

Although one might expect that an increased employer contribution would yield a greater increase in transit ridership,

**TABLE 12 Comparison of employer-paid and employee-paid pre-tax transit benefits recipients**

Region	Year	Measure	Employer-paid	Employee-paid	Average for All Recipients <sup>1</sup>
Philadelphia	2000	% of all recipients who are new riders	13.2%	3.8%	8.5%
		% of all recipients who increased their transit ridership	42.0%	23.0%	35.0%
		% of all recipients who increased the number of transit trips per week	12.6%	8.1%	—
Portland	1999	% Increase in transit ridership	34%	24%	—

Dash = not available.

<sup>1</sup> These figures represent the average for all transit benefits recipients (both those receiving employer-paid benefits and those receiving employee-paid pre-tax benefits). These figures are not the average of the individual figures for employer-paid recipients and employee-paid recipients since there are a different number of recipients in each of these categories.

survey results are inconclusive on this issue. Three surveys directly address the question of whether the level of the employer-paid benefit affects travel behavior; two examine actual behavior, and one examines a hypothetical situation. Only one of the two behavior-based surveys, Portland (1999), suggests that the amount the employer pays affects the extent to which employee transit use increases, as shown in Table 13.

The Portland (1999) study divided results into three benefit levels: no paid benefit (pre-tax only), 40- to 60-percent employer-paid benefit, and 90- to 100-percent employer-paid benefit. The survey also looked separately at employers participating in the PASSport program, a universal pass typically fully paid by the employer. The percentage of transit ridership increased as the benefit level rose, and the PASSport employers showed the highest average increase in transit ridership. These results should be viewed with some caution, however, because the location of the employers is not known, and location could have a bearing on the percentage change in transit ridership.

The 1994 San Francisco survey, on the other hand, found no correlation between the level of the employer-paid commuter benefit and the percent of employees reporting an increase in transit work trips. Accounting for urban/suburban location, \$20 Commuter Checks showed just as much impact in employee mode shifts to transit as \$30 Commuter Checks, suggesting that the fact that an employer *offers* a benefit has a much greater effect on transit ridership than the *level* of the benefit. The study authors speculate that most recipients induced to take new transit trips were relatively infrequent riders who plan to ride only once or twice per week and for whom, therefore, the difference between a \$20 and \$30 benefit would be negligible. Larger differences in the employer payment, however, may make a difference. The 1993 Government Accountability Office (GAO) study of federal employees in the Washington, DC area and elsewhere asked about current transit ridership, based on a \$21 commuter benefit, and whether employees would switch to

transit if they received a \$60 benefit. Results suggested that the mode split for transit could increase from 31 to 49 percent. However, additional research on this issue is needed, given that this was a hypothetical analysis.

Differences in the level of employer payment may be partly responsible for differences in results found in the mandatory CTR areas in comparison with the other surveys. Most of the data available from the mandatory CTR program areas was from the early to middle 1990s, a time when the tax-free limit for transit benefits was considerably lower than under current law. In 1992, the Energy Policy Act expanded the definition of qualified transportation fringe benefits to include transit and vanpool benefits, and imposed a tax-free limit of \$60 per month on these benefits; prior to 1992, tax-free transit passes were limited to a *de minimus* level (up to about \$21 per month). In 1995, the tax-free limit increased to \$65 per month. In 2002, the tax-free limit increased to \$100 per month.

The average employer payment in the Southern California data set, one of the mandatory CTR areas, was only \$28 per month. It is understandable that such a low employer payment might not encourage a notable increase in transit use, particularly in an area with limited transit services. In contrast, many of the surveys conducted by transit agencies and others were conducted at worksites where the employee received a high-value transit pass. Seven of the surveys were conducted in regions with universal pass programs, a program in which an employee receives an annual transit pass that is typically employer-paid.

#### *Implementing a Transit Benefit with Supporting Benefits Results in Greater Impact*

Implementing supporting programs, like a guaranteed-ride-home program and on-site marketing, can result in larger

**TABLE 13 Comparison of level of employer-paid commuter benefit**

Region	Year	Level /Value of Commuter Benefit	Increase in Transit Ridership	% Employees Reporting Increase in # of Transit Work Trips	% Employees Using Transit or Saying Likely to Ride Transit
Portland	1999	No benefit	24%	—	—
		40–60% paid	31%	—	—
		90–100% paid	46%	—	—
		PASSport (universal pass—usually 100% employer-paid)	57%	—	—
San Francisco	1994	\$20 per month	—	35%	—
		\$30 per month	—	30%	—
		Over \$30 per month	—	38%	—
Washington, DC and elsewhere	1993	Existing \$21 per month	—	—	31%
		Proposed \$60 per month	—	—	49%

Dash = not available.

**TABLE 14 Average changes in transit mode split and transit ridership for Southern California employers implementing transit benefits programs with and without supporting programs**

Impact of Implementing	Number of Employers	Transit Mode Share		% Point Change (Change per 100 Employees)	% Change in Transit Ridership
		Before	After		
Transit benefits without supporting programs <sup>1</sup>	57	4.5%	3.4%	-1.1%	-24%
Transit benefits with supporting programs in the same period <sup>1</sup>	23	4.9%	5.4%	0.5%	10%

<sup>1</sup> The worksites could be offering a variety of other competing or supporting programs. The focus of this analysis is on the change in programs being offered from one period to the next.

impacts on transit use than simply implementing a transit benefit on its own. A guaranteed-ride-home program, also sometimes called an emergency-ride-home program, helps support transit use because it helps employees get over the fear of being stranded in the event of unexpected overtime or a family emergency that would require the employee to leave work during noncommute hours. A guaranteed-ride-home helps employees to set aside one of their biggest concerns about using transit and can be particularly important in locations where transit services to a worksite run solely during commute hours. On-site marketing, through transit fairs and other events, also helps to support a transit benefits program by making employees who may not have used transit in the past more aware of available transit services and how they operate.

The Southern California mandatory CTR program data set contained sufficient records to separate out cases in which the only change in a benefits package was implementation of a transit benefit from cases in which a transit benefit was implemented along with supporting programs. The analysis supports the theory that implementing transit benefits in conjunction with supporting benefits—namely, internal marketing

programs and guaranteed-ride-home programs—seems to be more effective than implementing them alone (see Table 14). In the cases in which transit benefits were implemented alone, with no other change in commuting programs, transit mode share on average actually declined; however, when the transit benefit and supporting programs were implemented together, with no other change in commuting programs, transit mode share increased by 10 percent. Follow-up conversations with staff at agencies responsible for CTR programs supported this theory; staff said that they had seen “synergy” among benefits programs. However, the analysis does not control for other factors, such as location, so it is not clear if these two groups of employers are comparable in all respects.

Figure 13 shows the breakdown within these two groups based on the number of employers who saw increases, decreases, or essentially no changes (-1% to 1% change) in transit ridership. For the group of employers without supporting programs, the pattern follows a bell curve, with the most frequent response being no change (-1% to 1% change) in transit ridership. For the group with supporting programs, the number of employers that saw modest increases (1% to

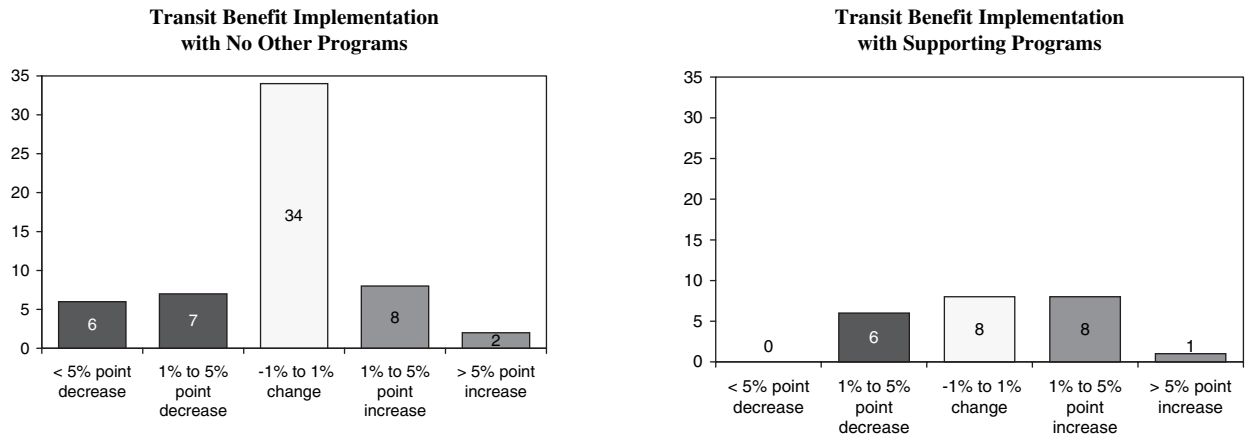


Figure 13. Number of Southern California worksites by category of change in transit mode share, with and without supporting programs.

5% increase) was the same as the number of employers that saw no change (–1% to 1% change). There were no employers in this group with large (more than five percentage points) decreases in transit ridership. This seems to indicate that implementing transit benefits with supporting programs had some, albeit small, impact in these circumstances; if they had had no impact, we would expect a random distribution, as we see in the first group.

#### *Impacts of Competing Transportation Programs Are Unclear*

Although it appears that supporting programs can help boost transit ridership, some employer-based commuting programs, like ridesharing or telework programs, may also compete against transit benefits programs. More programs may mean more competition for a finite market of potential “switchers.” For example, if a worksite only offers the transit benefit, there may be a net increase in the number of people using transit and a reduction in vehicle trips. If, on the other hand, the employer offers both a transit benefit and a telework program, the worksite might see fewer employees take advantage of transit because some employees who would have switched to transit choose to telework (although the worksite might see a larger total reduction in driving trips). Thus, transit benefits programs *may* be more effective at increasing transit use when there are fewer other “competing” incentive programs; however very limited data on this factor were available.

The availability of competing programs may be partially responsible for the small increases in transit use that were found on average in mandatory CTR areas. Because worksites in mandatory CTR areas are required to reduce employee trip making, many of these employers offer a large number of transportation program options for their employees. Options such as ridematching, flexible work hours, compressed work weeks, and telecommuting may encourage employees to switch to these options and reduce the impact of the transit benefit in terms of increasing transit use. For example, in the Tucson (Pima County, Arizona) data set, all 21 worksites that implemented a transit benefits program also offered rideshare matching services, and over half offered telecommuting. In contrast, in the areas surveyed by transit agencies and others, it is likely that the employers did not promote options like ridesharing and telecommuting as aggressively, and transit benefits were more likely to be viewed as the primary transportation benefit.

On the other hand, among Southern California worksites that implemented a transit benefits program with no other change in programs being offered, those that saw the largest increases in transit mode share did not differ greatly from others in terms of the types of programs being offered. This finding suggests that other factors were probably more important than the existing benefits profile.

#### *Effects of Program Design Inconclusive*

The available data do not reveal whether the type of employer program (i.e., universal pass, monthly pass, or voucher) affects the extent to which the program brings in new transit riders. As noted above, only one of the surveys—Portland (1999)—provided any comparison of results from a monthly pass program and a universal pass program. The figures suggest that the universal pass program may produce a greater increase in transit ridership than a monthly pass program. However, no information is available on the locations of the employers or other factors that might affect the ridership response.

Although some of the largest impacts on transit use were reported in regions with universal pass programs, comparing results across different surveys should be done with caution, given that only a few types of programs are represented and the locations of the worksites being analyzed differ. As noted earlier, most of the surveys available are in areas with universal pass programs (7 surveys) and voucher programs (12 surveys), with monthly pass programs barely represented (see Table 4). The locations of the surveys may also have a large effect on results; we would expect that the level of transit service and existing transit use would affect the extent to which programs are able to generate new riders. Four of the surveys come from the New York metro area, which has a very different transit profile than any other metropolitan area in the United States.

#### **Impacts of Vanpool and Other Financial Benefits on Employee Travel Behavior**

The three mandatory CTR regions provided data on the impacts of vanpool benefits and other financial benefits, which include transportation allowances; parking cash-out programs; and financial benefits to bicyclers, walkers, or carpoolers. These benefits programs generally showed similar patterns as the transit benefits programs—relatively small changes *on average* in relevant mode shares (vanpool mode share for vanpool benefits and transit, carpool/vanpool, bicycling, and walking mode share for other financial benefits). The worksite records are characterized by a wide range of effects, with some worksites showing reductions, and others showing increases in these mode shares. For instance, in Southern California, both introducing and eliminating financial benefits (with no changes in the types of other worksite programs being offered) were associated with increases in carpool mode share, and it may be that other factors—such as an enhanced high-occupancy vehicle network throughout the region—had an impact on encouraging ridesharing.

These findings suggest that the effects of these transit benefits programs vary considerably at different worksites based on specific worksite factors (e.g., location, employer commitment, and types of other programs being offered) or perhaps



that the effects of these programs are overshadowed by other external factors (e.g., employee turnover and changes in transportation costs). Additional detail on the findings on vanpool and other financial benefits from CTR areas is included in Appendix D.

### **Comparison of Study Findings with Other Literature**

These findings on the travel effects of transit benefits are generally consistent with previous research on the effects of employer-based TDM programs. The literature on the factors that affect transit mode share and employee travel behavior is too extensive to be completely reviewed here, but the following briefly compares several of this study's findings with conclusions from other literature.

#### *Employer-Provided Transit Benefits Usually Increase Employee Transit Ridership and Reduce Driving to Work*

Transit benefits, whether pre-tax or employer-paid, lower the cost of transit. It is thoroughly consistent with the literature, and with economic theory, to find that decreased transit costs increase transit ridership. The finding from this research that SOV use typically declines by up to 20 percent after implementing a transit benefits program is firmly within the range of effects reported in the literature on the potential of employer-based TDM programs. For instance, another TCRP project (B-4, "Cost-Effectiveness of TDM Strategies") evaluated some 50 employer-based TDM programs in the United States and estimated that the average reduction in vehicle trips among these "successful" programs was 15.3 percent (9). A synthesis of TDM experience for the U.S. DOT concluded that "with the right mix of strategies, a TDM program at individual employment sites could reduce vehicle trips by as much as 30 to 40 percent. . . . In almost all cases, however, one major conclusion stands out—some level of incentive or disincentive must be present to encourage automobile users to change their travel behavior" (10).

In 2001, EPA analyzed the effects of commuter benefits using its Commuter Model, a tool designed to estimate the travel and emissions effects of employer-based TDM programs based on findings from the TDM literature (11). Although the model is not specifically designed to analyze commuter benefits programs, the model was run using a lower price for transit and vanpools to simulate the way that commuter benefits programs reduce employee transit and vanpool costs. According to the model results, a \$20-per-month, employer-paid benefit shows a 2.8- to 4.6-percentage-point reduction in SOV use (depending on starting mode share), and a \$40-per-month, employer-paid benefit shows a 7.3- to 10.5-percentage-point reduction in SOV use. These effects are consistent with the research findings based on the surveys con-

ducted by transit agencies and other organizations. Although the average subsidy in most of the surveys is unknown, it is likely that the average would be \$65 or under because that was the tax-free limit when most of the surveys were conducted.

#### *Transit Availability and Urban Location/Design Influence the Effectiveness of Employer-Based Programs*

The literature generally supports the research finding that transit availability and land use patterns are important factors in the effectiveness of transit benefits programs. An analysis of the effects of land use and TDM strategies on commuting behavior, relying on SCAQMD data, found that land use and urban design characteristics influence mode choice and the effectiveness of TDM strategies. The data revealed that "when financial incentives are present, the greatest reduction in the drive alone share is realized in areas with an aesthetically pleasing urban character . . . This appears to be a result of the availability of alternatives modes (e.g., transit service) and the quality of the environment" (12).

#### *Employees Are More Likely to Increase Transit Use with Employer-Paid Benefits*

Most of the literature used to estimate the effects of incentive programs on travel behavior is based on pricing studies (transit fare prices or parking prices) and does not directly address the question of who pays. This study suggests that it may be an important factor if the employer pays, which is consistent with literature that generally finds that employer commitment to a program is an important determinant of employee travel response (see, for example, the work of Weber, Nice, and Lovrich [13]). It may be that making a financial commitment sends a powerful message to employees, and, that once that message is sent, the absolute amount is somewhat less important.

### **Data Gaps on Travel Impacts**

In terms of understanding travel impacts, the research revealed several gaps in knowledge, as well as observations regarding how these impacts are tracked. These gaps and observations are discussed below.

#### *Relatively Little Information Has Been Collected on Travel Impacts in Many Regions*

Although this report compiled data from 21 surveys and 3 mandatory CTR programs, the total number of regions represented is only 14 (Southern California is represented in both data sets). Several major metropolitan regions where transit benefits are available did not have available survey



data (e.g., Boston, Houston, and San Diego), and many mid-sized regions that might be able to shed light on how effective transit benefits are in less transit-intensive environments also did not have available data.

#### *Quality of Survey Data Is Uncertain*

Thirteen surveys provided information on their response rates. These ranged from 8 to 63 percent, with both an average and a median of 38 percent. (The mandatory CTR regions did not have information available on their response rates but generally require at least an 85-percent response rate.) These rates are not sufficiently high to ensure that the surveys accurately reflect the behavior of all employees. For example, in surveys of all employees, it is possible that employees who receive transit benefits and ride transit are more likely to respond than drivers because they see the topic as more pertinent. This would introduce bias into the survey responses and skew the results toward suggesting higher transit ridership than actually exists. This bias would probably constitute less of a problem in surveys in which the only employees surveyed are those receiving transit benefits.

#### *Surveys Do Not Provide Comparable Information*

Many of the surveys, because of the respondent pool and the types of questions asked, provided relatively little usable information. The research team contacted several agencies that collected some information via surveys, but the information was ultimately deemed unusable because there were too many gaps, because the questions asked were not germane to the research problem, or because the information was provided only anecdotally with no supporting evidence. Of the surveys that were incorporated into this report, several asked hypothetical questions (which are generally felt to provide less valuable information than behavioral questions). The discrepancy in survey design makes it difficult to compare results across regions.

#### *Additional Information Is Needed on Several Factors That Influence Travel Response*

Although the available data do provide an indication of the factors that influence the level of travel response, additional data would be helpful to provide stronger evidence about the impacts of these factors in different circumstances. In particular, more information is needed on the following:

- **Effect of program design.** The survey results we were able to obtain are primarily from areas with universal pass and voucher programs. Only one of the surveys—Portland (1999)—provided any comparison of results from monthly pass programs and universal pass pro-

grams. It would be desirable to obtain more detailed data on employers that have implemented different types of programs (i.e., monthly passes, universal passes, and vouchers) in specific metropolitan areas in order to compare the impacts of programs across different types.

- **Employer location and transit service levels.** Only two surveys allowed an examination of the impact of transit benefits programs by employer location (e.g., downtown or suburb). It would be helpful to have more detailed information so that impacts could be compared among, as well as within, regions. It would also be useful to have better data to understand the role of transit service levels (e.g., a suburb with very good transit service versus a suburb with limited transit service).
- **Employer-paid versus employee-paid, pre-tax impacts.** Only two regions collected data from both employers offering employer-paid benefits and employers offering employee-paid, pre-tax benefits. This is due in part to the fact that many of the surveys reviewed were conducted before 1998, the year when legislation was passed that allowed pre-tax benefits. However, even among more recent surveys, data are not always collected on whether the employer contributes to the cost of transit benefits. Although results confirmed the hypothesis that employees are more likely to switch modes with employer-paid benefits, this finding would be far more robust if it was supported with data from multiple areas.

Overall, it is notable that relatively few transit agencies have conducted surveys or evaluations to assess the impacts of their transit benefits programs on transit ridership and vehicle travel. The transit agencies that were most likely to have conducted surveys were those with universal pass programs because surveys often play an important role in determining the price paid by the employer. However, for other transit agencies and organizations that play a role in promoting transit benefits programs, surveys can play a valuable role in determining the effectiveness of the program in meeting goals such as increased transit ridership, reduced vehicle travel, and reduced parking demand.

#### **IMPACTS ON TRANSIT AGENCIES' RIDERSHIP, REVENUES, AND COSTS**

The second component of this research focuses on how transit benefits programs affect transit agencies in terms of ridership, revenues, and costs. This section builds on the research conducted on employee travel behavior impacts and addresses the following questions:

- **How much systemwide ridership and revenue come from transit benefits programs?** The share of overall ridership and revenues that comes from employer programs affects the extent to which these programs can help

retain and attract riders and yield cost savings to the transit agency.

- **Do transit benefits programs increase transit ridership and revenues?** Research on the impacts of transit benefits programs on employee travel behavior (discussed earlier) suggests that transit benefits programs can increase transit ridership. This section explores the extent to which transit ridership and revenues increase and how program design affects revenues per rider.
- **How much do transit benefits programs cost to administer?** Administration costs include staff time for employer outreach as well as marketing and other costs.
- **Are there differences in revenue, ridership, or cost characteristics among different program types?** If different types of programs (e.g., universal passes or monthly passes) generate different levels of revenues per rider and have different costs, it is useful for transit agencies to understand these effects so that they can offer the program options that best meet their agencies' goals.
- **How do transit agencies rate the success of their transit benefits programs?**

Answers to these questions are designed to help transit agencies and others (1) assess whether employer transit benefits programs are effective in attracting riders and revenue and what an effective program costs, as well as (2) determine which programs would be most suitable for meeting their goals and objectives.

### Data Sources and Approach

The results summarized in this section are drawn from interviews conducted with seven transit agencies selected to provide a range of modes, geographic areas, ridership, and employer programs. (Although an eighth agency, Capital Metro in Austin, was also interviewed, the program was far smaller than the others and comparable data for many program attributes was not available. Therefore, data findings are not presented in the body of the report, although the program is described in Appendix F.) The seven transit agencies whose interview results are included in this study are the following:

- Washington Metropolitan Area Transit Authority (WMATA), Washington, DC;
- Metropolitan Atlanta Rapid Transit Authority (MARTA), Atlanta, GA;
- King County Metro, Seattle, WA;
- Regional Transportation District (RTD), Denver, CO;
- Metro Transit, Minneapolis/St. Paul, MN;
- Santa Clara Valley Transportation Authority (VTA), San Jose, CA; and
- Valley Metro, Phoenix, AZ.

The agency locations also correspond with places where survey data on travel impacts were available. The interviews were conducted using an interview guide, and interviewers asked follow-up or clarifying questions when necessary. In some cases, the persons interviewed sent additional information following the interview. A copy of the interview guide is available in Appendix E, and case study write-ups of the transit agency programs are in Appendix F.

Background information on the seven agencies such as location, modes, service area population, and other characteristics is provided in Table 15. The transit agencies are diverse in terms of region (representing the Mid-Atlantic, Southeast, Midwest, Mountain West, Southwest, and West Coast) and in modes (three are bus-only agencies, two have light rail, and two have heavy rail). Average weekday ridership ranged from just over 100,000 to over 1 million, and all types of transit benefits programs are represented: universal pass, monthly pass (discounted and nondiscounted), and stored-value card/voucher.

### Effects of Transit Benefits Programs on Transit Agencies

#### *Many Agencies Offer Multiple Types of Transit Benefits Programs*

Although the research team anticipated that most transit agencies would have only one transit benefits program in place, of the seven interviewed, four had multiple programs. Types of employer programs offered included monthly passes, stored-value cards, universal passes (for more information on universal pass programs see “Unlimited Access” [14]), and vouchers (which can be traded in for transit fare media or use on vanpools). Generally these situations have evolved in response to employer demands and available technology. As Table 15 shows, three of the seven agencies have only one employer program, and King County Metro has seven.

Table 16 provides additional information on one of the more complex types of programs in terms of pricing, the universal pass. Universal pass programs are generally defined by three elements: (1) they function as an annual pass (valid for a full year of service); (2) they are priced based on a requirement that passes be purchased for all employees; and (3) the price of each individual pass is deeply discounted, based on the recognition that not all employees at the worksite will actually use transit daily. However, in practice, such programs vary considerably and do not always follow these prescriptions.

#### *Transit Agencies Generally Track Program Participation*

**Employer Participation.** The number of employers participating appears to be one of the measures agencies track most closely. Most employer programs serve several hundred employers, although the figures varied widely among transit

**TABLE 15 Summary characteristics of transit agencies examined and their employer programs**

<b>Transit Agency Name</b>	<b>Location</b>	<b>Modes</b>	<b>Service Area Population<sup>1</sup></b>	<b>Average Weekday Ridership<sup>1</sup></b>	<b>Annual Fare Revenues<sup>1</sup></b>	<b>Program Name</b>	<b>Program Type</b>	<b>Year Began</b>
WMATA	Washington, DC	Heavy rail, bus	3,300,000	1,300,000	\$375,000,000	Metrochek	Stored-value card/Voucher	1993
						Smart Benefits	Stored-value card/Electronic voucher	2000
MARTA	Atlanta, GA	Heavy rail, bus	1,300,000	530,450	\$101,300,000	MARTA Partnership Program	Monthly pass with volume discount	1992
King County Metro	Seattle, WA	Bus only	1,750,000	340,000	\$78,400,000	Flex Pass	Universal pass	1993
						UPass	Universal pass	1990
						GoPass	Universal pass	1997
						Consignment Retail Pass	Monthly pass	1977
						Phone/Mail Program	Monthly pass	–
						Commuter Bonus Voucher	Voucher	1995
						Bonus Plus Vouchers	Rewards program	1996
RTD	Denver, CO	Light rail, bus	2,300,000	270,000	\$47,100,000	Eco Pass	Universal pass	1991
Metro Transit	Minneapolis/St. Paul, MN	Bus only	1,600,000	244,000	\$65,000,000	Metro Pass	Modified universal pass	1998
						TransitWorks!	Discounted pass	–
VTA	San Jose, CA	Light rail, bus	1,700,000	186,000	\$35,700,000	Eco Pass	Universal pass	–
Valley Metro	Phoenix, AZ	Bus only	1,350,000	107,000	\$28,600,000	Bus Card Plus	"Credit card" for bus	1991
						Private Outlet	Monthly pass	–

Dash = not available.

<sup>1</sup> All figures are from the National Transit Database, 2001, available at [www.ntdprogram.com/NTD/ntdhome.nsf/Docs/NTDDData?OpenDocument](http://www.ntdprogram.com/NTD/ntdhome.nsf/Docs/NTDDData?OpenDocument).

### Understanding the Presentation of Results

Although information is summarized for each transit agency, in general, the reader is cautioned against comparing ridership, revenues, and costs among different transit agencies because the transit agencies and the environments within which they operate differ so greatly. Although the data presented in this report are useful as benchmarks, they are a snapshot in time for individual agencies. It should be recognized that the sample size is small, and a range of factors could affect these metrics for individual transit agencies.

agencies. WMATA's Metrochek program is the largest in terms of employer participation, with over 3,300 employers participating. Table 17 provides figures on employer participation, the approximate number of transit benefits recipients per employer, and the percentage of employers who pay for the benefit or offer employee-paid, pre-tax deductions.

The average number of participating employees per employer varies widely among transit agencies and programs. The lowest is at Valley Metro, with approximately 35 transit benefits recipients per employer on average. The highest is for the university programs at King County Metro, with 6,000 riders per participating employer. The universal pass programs tend to have several hundred employees using the benefit per employer (on average, 250 for Flex Pass, 210 for Metropass, and 490 for the VTA Eco Pass), which suggests that universal pass programs typically serve large employers. Most other programs have 20 to 100 employees on average participating per employer.

**Who Pays for the Benefit.** The share of employers that fully cover the cost of the transit benefit appears to vary considerably among agencies, although many agencies do not collect this information. Four of the seven agencies interviewed had complete or partial information on whether their

**TABLE 16 Universal pass program comparison**

Transit Agency Name	Program Name	Purchase Requirements	Universal Pass Cost (Annual per Employee)	Regular Pass Cost	Employer Requirements on Sharing Cost
King County Metro	FlexPass	All employees	\$50 to \$400, based on zone; may be determined individually for non-zone or employers over 500 employees; incentives provided in first 1–3 years	\$396 to \$1,584, depending on zone and peak vs. off-peak	Employer must pay at least 50% of costs
	UPass <sup>1</sup>	Interested employees/students	Approximately \$280 (\$70 per quarter, sold on a quarterly basis)	\$396 to \$1,584, depending on zone and peak vs. off-peak	Students pay \$35/quarter; Faculty/staff pay \$48.96/quarter; the University of Washington pays rest
RTD	Eco Pass	All employees	\$50 to \$228, depending on service level area and # of employees	\$1,050 (Regional Valupass)	None <sup>2</sup>
Metro Transit	Metropass	Interested employees	\$756 (\$63 per month) for participating riders; new riders can be added without additional costs during the year	\$504 to \$1,140 (based on monthly fares of \$42 to \$95)	None <sup>2</sup>
VTA	Eco Pass	All employees	\$7.50 to \$120, depending on area and # of employees	\$577.50 (regular) or \$990 (express)	None <sup>2</sup>

<sup>1</sup> Both the UPass and Go Pass programs allow participation by students and employees. Only employees are eligible for the tax benefits associated with a transit benefits program because students are not considered employees under the tax code. However, the research team used data available on these programs to the fullest extent possible, separating students from employees when that information was available.

<sup>2</sup> "None" regarding requirements on cost-sharing means that the transit agency does not require employers to pay a minimum dollar amount for their participating employees. In theory, the employer could ask employees to pay any portion of the cost of the universal pass, up to the full cost. In reality, most universal pass costs are provided by the employer, especially when the employer is required to purchase passes for all employees. RTD and VTA do not track this for participating employers; information on Metropass employers is available in Appendix F.

**TABLE 17 Data on participating employers (as of 2003)**

Transit Agency Name	Program Name	Number of Participating Employers	Approx. # Recipients per Employer <sup>1</sup>	% of Employers Who		
				Pay Full Amount	Pay Portion (Combination Benefit)	Pre-tax Only
WMATA	Metrochek	3,349	55	–	–	–
	SmartBenefits	623	30	–	–	–
	<b>Total</b>	<b>3,972</b>	<b>50<sup>2</sup></b>	<b>55%</b>	<b>10%</b>	<b>35%</b>
MARTA	Monthly pass	Over 300 <sup>3</sup>	100	20% <sup>4</sup>	20% <sup>4</sup>	30% <sup>4</sup>
King County Metro	Flex Pass	Over 200 <sup>3</sup>	250	75%	25%	
	UPass and GoPass	8 campuses	6,000	0%	100%	0%
	Retail programs	700 to 800	15	–	–	–
	Voucher programs	540	–	–	–	–
	<b>Total</b>	<b>1,400 to 1,500</b>	<b>100<sup>5</sup></b>	–	–	–
RTD	Eco Pass	1,041	50	–	–	–
Metro Transit	Metropass	72	210	12%	18%	70%
	TransitWorks!	515	20	–	–	–
	<b>Total</b>	<b>587</b>	<b>45<sup>2</sup></b>	–	–	–
VTA	Eco Pass	87	490	–	–	–
Valley Metro	Bus Card Plus	331	35	–	–	–
	Private Outlet	198	–	–	–	–
	<b>Total</b>	<b>529</b>	–	–	–	–

Dash = not available.

<sup>1</sup> Calculated based on average number of employees who use the transit benefit at least occasionally, divided by number of participating employers.

<sup>2</sup> This figure is representative of the entire transit agency program and not a sum of the figures from the component programs listed above.

<sup>3</sup> Some of the MARTA and King County Metro contracts represent more than one employer (such as sales to a transportation management association that distributes passes to multiple employers).

<sup>4</sup> Percentages do not sum to 100 because MARTA was uncertain about what 30 percent of the employers offer.

<sup>5</sup> Total employees per employer excludes voucher programs.

participating employers paid for transit benefits or whether they allowed employees to pay using pre-tax dollars. The data show wide differences in the share of employers paying for the full cost of the benefit. In the Metropass program in Minneapolis, the vast majority of participating employers offer a pre-tax program, and only 12 percent pay the full cost. MARTA has a more equal proportion of employer-paid to employee-paid, pre-tax benefits, although the agency was not certain about what some share of employers offer. WMATA reported that 55 percent of employers offer fully employer-paid benefits, and this high share is explained in part by the fact that federal executive agency departments are required to pay the entire cost. King County Metro's Flex Pass reported the highest percentage of employers fully subsidizing the program, 75 percent (this agency requires employers to pay at least half the cost of the pass). King County Metro also provides employer incentives during the first few years, which may accustom employers to paying the full cost; furthermore, large employers in the region are subject to mandatory CTR requirements.

**Employer Participation Trends.** For most transit agencies interviewed, the trend in the number of employers participating has been upward, even with the downturn in the economy in the early years of this decade. Four of the seven transit agencies provided data on employer participation over time, which is displayed in Figure 14. These data show that employer participation in the King County FlexPass has grown steadily, whereas employer participation in Metro Transit's programs plateaued for a year, and then continued to increase. The number of employers participating in transit benefits programs at both RTD and VTA has fallen from previous highs. RTD staff attributed the decline to fare increases and changes in policy that made it less attractive for small employers to participate (the average number of transit benefits recipients per employer for the RTD Eco Pass is still relatively small at 50 employees, compared with many other universal pass programs). According to VTA, the largest factor in the decrease in employer participation has been the poor economic climate. However, RTD's and VTA's total number of *employees* participating in their employer programs has increased



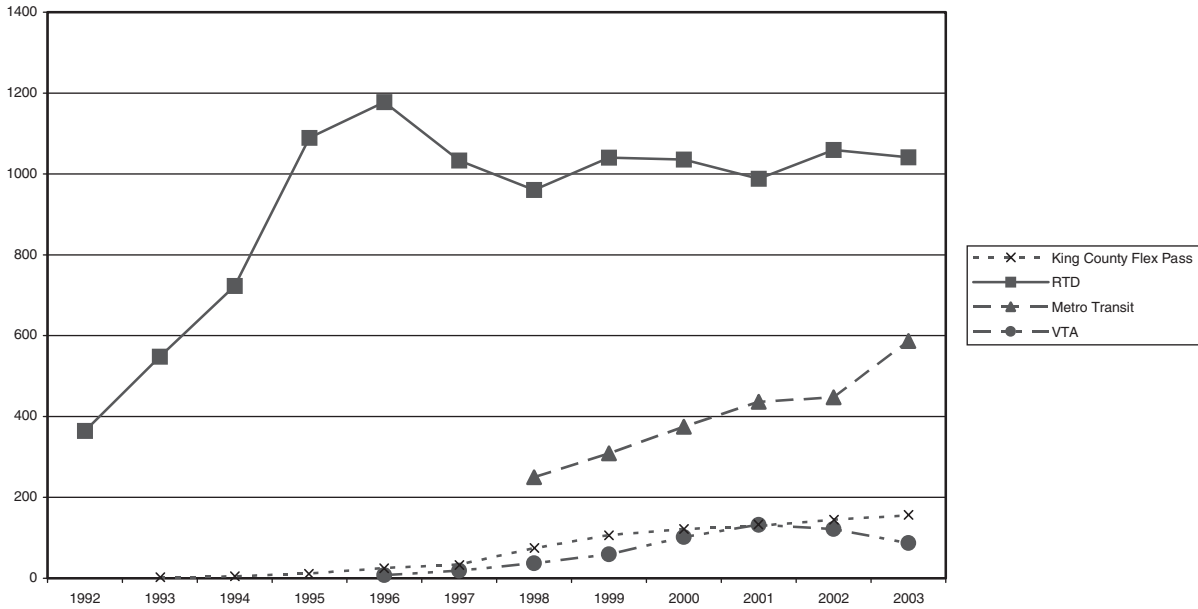


Figure 14. Number of employers participating in transit benefits programs, 1992–2003.

steadily, demonstrating that a decline in employer participation does not necessarily mean fewer transit benefits recipients. The number of employees receiving transit benefits depends on the size of employers participating (in terms of numbers of employees) and the share of employees who participate at those worksites (which may depend on the level of employer payment, type of program design, or other factors).

*Transit Benefits Users Can Make Up a Substantial Share of System Ridership*

**Employee Participation.** Employees participating in transit benefits programs make up a substantial portion of total transit ridership for many transit agencies. For the agencies interviewed, the *percentage* of all riders using employer transit benefits programs was estimated by the transit agencies at between 5 and 25 percent. The total *number* of employees receiving transit benefits through an employer program ranged from 12,000 to over 200,000. The highest percentages of transit riders who participate in employer-sponsored transit benefits programs were at WMATA (approximately 25 percent of transit riders), Valley Metro (about 22 percent), and King County Metro (20 to 22 percent of riders). WMATA is the largest transit agency in terms of total daily ridership and attracts a large number of federal employees who receive full employer-paid benefits. Valley Metro, in Phoenix, is the smallest of the seven transit agencies interviewed in terms of total systemwide ridership, but has the largest number of staff working in employer outreach (including rideshare programs), so the program’s success may stem in part from this intensive effort.

Table 18 provides figures on ridership for each transit benefits program and the percent of total system riders using transit benefits.

**Employee Participation Trends.** Employee participation in transit benefits programs has been increasing for nearly all of the agencies that provided historical participation trends. Even when employer participation has declined or plateaued, employee participation has consistently increased. Five agencies had trend information on the number of employees participating in transit benefits programs; this information is graphed in Figure 15. Three of the agencies offer universal pass programs, which track the number of employees at participating employers. While generally not all universal pass recipients ride transit, the figures assume that all of King County’s UPass program employee participants ride transit, since students, faculty, and staff are allowed to opt out of the program.

Most striking in the employee participation trends is the large jump in participation in WMATA’s transit benefits program between 2000 and 2001. Two substantial reasons for the large increase between 2000 and 2001 at WMATA were the increase in the tax-free limit from \$65 to \$100 and implementation of an Executive Order signed by President Clinton that requires federal government agencies to fully pay for transit benefits up to the tax-free limit for all interested executive branch employees in the Washington, DC, region. VTA, MARTA, and RTD have shown much steadier increases in employee participation over time. VTA and MARTA reported being affected by economic downturns, and all three had fare increases (or in the case of MARTA, a reduction in the employer discount that made employers’ costs higher). The strong employee participation figures seem to indicate that



**TABLE 18 Employee participation in transit benefits programs (as of 2003)**

Transit Agency	Program Name	Number of Participating Employees	% of All Riders Using Employer Passes <sup>1</sup>
WMATA	Metrochek	189,067	–
	Smart Benefits	18,933	–
	<b>Total</b>	<b>208,000</b>	<b>25%<sup>2</sup></b>
MARTA	Partnership Program	30,700	<10% <sup>2</sup>
King County Metro	Flex Pass	38,000 to 40,000 (est.)	6% to 8%
	UPass and GoPass	48,600 <sup>3</sup>	>10%
	Retail programs	10,000 to 14,000 (est.)	3% <sup>4</sup>
	Voucher programs	–	–
	<b>Total</b>	<b>95,000 to 103,000</b>	<b>20% to 22%</b>
RTD	Eco Pass	52,700 (est.) <sup>5</sup>	12% to 21% <sup>6</sup>
Metro Transit	Metropass	15,000	7%
	TransitWorks!	12,000	5% (est.)
	<b>Total</b>	<b>27,000</b>	<b>12% (est.)</b>
VTA	Eco Pass	42,800 (est.) <sup>7</sup>	5%
Valley Metro	Bus Card Plus	12,189	11%
	Private Outlet	12,000 (est.)	11%
	<b>Total</b>	<b>Over 24,000</b>	<b>22%</b>

Dash = not available.

<sup>1</sup> Estimated by transit agency staff, unless otherwise noted.

<sup>2</sup> Estimated based on National Transit Database ridership figures for FY 2001.

<sup>3</sup> UPass ridership is lower during summer quarter; approximately 26,000.

<sup>4</sup> Estimated based on King County Metro staff estimates for other programs.

<sup>5</sup> Estimated ridership based on survey figures showing that 67 percent of eligible employees participate (see survey write-up in Appendix C).

<sup>6</sup> 14% of bus riders, 12% of light rail riders, and 21% of skyRide riders. (No numbers were given, so an overall total could not be estimated).

<sup>7</sup> Estimated ridership based on survey figures showing that 36.4 percent of eligible employees participate (see survey write-up in Appendix C).

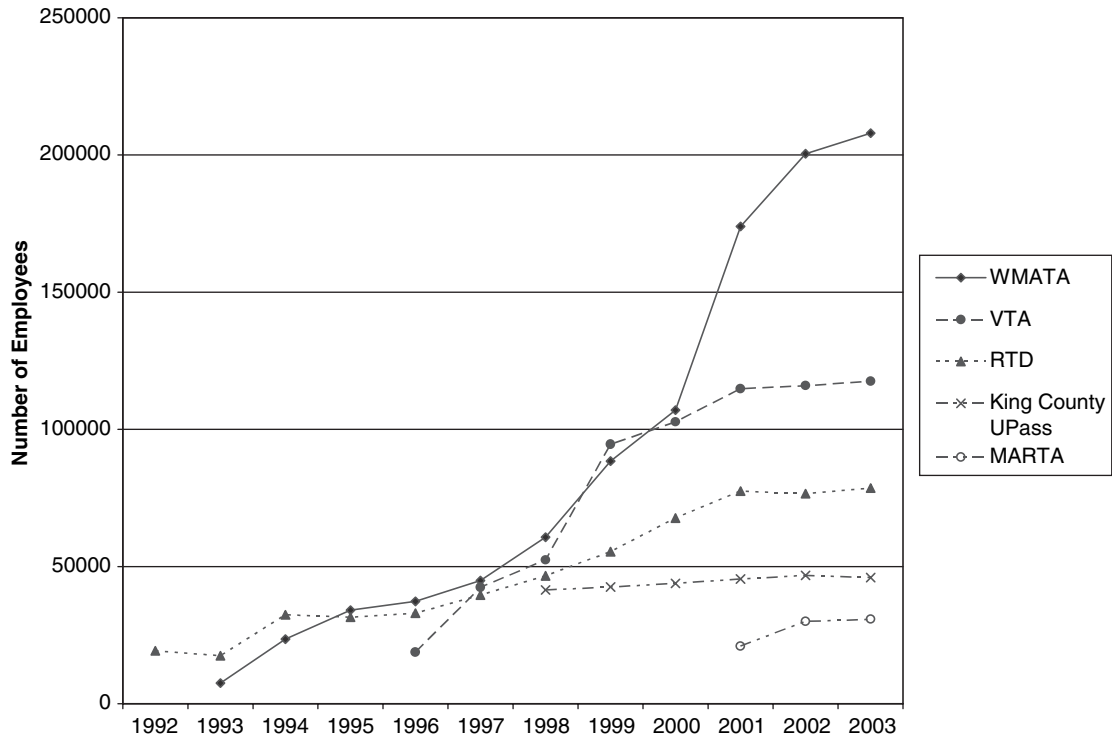
the programs are fairly resilient in the face of financial obstacles for employers. Participation in King County's UPass has been quite steady, but the program only serves the University of Washington, and, therefore, it may have reached its saturation point among potential recipients.

#### *Transit Benefits Programs May Have Contributed to Ridership Growth*

Most transit agency staff involved in the transit benefits programs believed that these programs have contributed to ridership growth. Given a scale from "significant" to "no impact," most of the transit agencies characterized their transit benefits program as having a "significant" effect on peak-period ridership and a "minor to moderate" or "moderate" effect on off-peak ridership. (See Table 19.) The agency staff who market these programs clearly feel that the programs are not only serving existing transit riders but are also encouraging additional transit trips. The agencies, however, often did not have con-

crete data to assess impacts at a quantitative level, and staff involved in managing the program are personally invested in it and may not be able to accurately judge ridership impacts at a systemwide level.

Moreover, the agencies' assessments of ridership increases do not necessarily match the percentage of total riders using transit benefits. For instance, WMATA, with the largest absolute number and percentage of riders participating in the transit benefits program, rated the program only "moderate" in increasing ridership, whereas many of the programs with much smaller shares of ridership through employer programs rated their programs as "significant" in increasing ridership. Although a larger number of employees participating in a transit benefits program does not necessarily indicate that the transit benefits program increased ridership by a larger margin, the participation level does provide some indication of the maximum level by which the program might increase ridership. Differences in perceptions about impacts may reflect different expectations of what the program is meant to accomplish.



Note: WMATA participation figures were estimated based on revenues; see case study in Appendix D for details. MARTA data estimated based on number of annual cards sold.

Figure 15. Trends in employee participation in transit benefits programs at five agencies.

TABLE 19 Transit agency perceptions of ridership impacts of transit benefits programs

Transit Agency Name	Program Name	Impacts on Ridership		
		Peak	Off-Peak	Overall
WMATA	Metrochek	Moderate	No impact	Moderate
	Smart Benefits			
MARTA	Partnership Program	Significant	Moderate	Significant
King County Metro	Flex Pass	Significant	Minor to moderate	Significant
	UPass and GoPass	Significant	Minor to moderate	Significant
	Retail programs	Significant	Significant	Significant
	Voucher programs	Staff characterized program as contributing to maintaining ridership		
RTD	Eco Pass	Significant	Moderate	Moderate
Metro Transit	Metropass	Significant	Moderate	Significant
	TransitWorks!	Significant	Moderate	Significant
VTA	Eco Pass	-	-	Moderate
Valley Metro	Bus Card Plus	Moderate	Minor	Moderate
	Private Outlet			

Dash = not available.

It is difficult to develop quantitative estimates of the extent to which the transit benefits programs have affected overall transit ridership at agencies over time because it is impossible to state what ridership trends would have been if such programs were not in place. As noted earlier, four transit agencies interviewed—WMATA, MARTA, RTD, and VTA—provided trend data on employee participation in transit benefits programs. Based on data on total transit system ridership from the National Transit Database (NTD) and available survey data on the share of transit benefits recipients who are new to transit or who increased their transit use, an estimate of the contribution of the transit benefits program to total system ridership can be developed. Estimates for these agencies suggest that the transit benefits programs may have been responsible for a substantial portion of ridership growth between 1997 and 2001 (the most recent year for NTD data on ridership). It should be noted, however, that limitations in survey data (i.e., small sample sizes, low employee response rates, and surveys that were conducted many years in the past) create a high degree of uncertainty in these estimates.

For WMATA, there was a noticeable increase in overall transit ridership in 2001—a 118-percent increase—which corresponds with the steep increase in the number of employees participating in the transit benefits program. Over the period of 1997 to 2001, the number of weekday rides on WMATA services increased by nearly 187,000, whereas the number of transit benefits participants increased by 127,100 (between 2000 and 2001, overall weekday riders increased by about 130,000, while commuter benefits participants increased by about 65,000). Assuming that about one-quarter of transit benefits recipients in the Washington, D.C., area are new riders, based on the 1993 GAO survey of federal employees, and that the average recipient might take up to two transit trips per day, this suggests that perhaps *up to* about 60,000 new transit riders over this period can be traced to the transit benefits program. If this were the case, the transit benefits program may have accounted for about 34 percent of the ridership growth. However, the survey data may not reflect the actual ridership patterns of transit benefits recipients over the 1997-to-2001 period. The more recent State of the Commute survey (Washington, DC, 2001) found that approximately 48 percent of people who use Metrochek say that they “were influenced by” it, which could mean a number of things, from riding transit more often to continuing to stay on transit (not switching to driving alone); this survey also includes non-WMATA riders (e.g., riders on suburban bus services). The results of this survey *may* indicate that with up to \$100 per month available now, an even higher portion of Metrochek users are new riders or more frequent riders.

At RTD, the number of employees participating in the Eco Pass program increased from 1997 to 2001 by approximately 25,400, whereas overall ridership during that period increased by 29,600 rides per day. The ongoing RTD survey of employees at employers participating in the Eco Pass program (Denver, 2003) suggests that 24 percent of all recipients are

new transit riders. As a result, the employer program may have accounted for about 6,000 new riders per day, or, assuming up to two transit trips per day, *up to* nearly 42 percent of the overall growth.

At VTA, the gains *may* have helped contribute to an increase in ridership. Between 1997 and 2001, the number of weekday rides on VTA services increased by about 13,000 trips, whereas the number of Eco Pass participants increased by about 26,400 (the number of VTA Eco Pass participants was estimated based on the total number of employees eligible for Eco Passes [based on the employee population working for participating employers] multiplied by .364—a VTA survey showed that 36.4 percent of eligible employees hold Eco Passes). A VTA survey of employees at six participating employers (San Jose, 1997) found that about 61 percent of Eco Pass recipients are new transit riders. As a result, the employer program *may* have accounted for about 16,000 new riders. However, several factors make this estimate fairly uncertain: the small sample size of the 1997 survey (only six employers), the expansion of both light rail and bus service from 1997 to 2001, and the strong employment during that period. So although the Eco Pass program may be one of several factors responsible for the overall growth in VTA ridership, it is difficult to say which factors were most important.

For MARTA, an assessment of the impact of the transit benefits program could not be made because the data on transit pass program participation provided by the agency cover the years 2001 to 2003, whereas the data on overall system ridership from NTD are currently only available up to 2001.

#### *Transit Benefits Programs Can Make Up a Substantial Portion of Revenues*

Total revenues associated with employer sales can be a significant portion of total transit agency revenues. As shown in Table 20, the percentage of total agency revenues associated with employer sales for the seven agencies examined is estimated to range from 5 to about 40 percent of total revenues for each transit agency. Metro Transit and King County Metro report the highest shares of revenues from employer sales, 42 percent and 35 to 41 percent, respectively. WMATA follows with about 30 percent of total revenues coming from its employer programs. These are significant shares of total revenues, which may have implications in terms of the efficiency of distributing fare media and reducing the costs of individual transactions. Overall, revenues tend to be related to the size of the transit agency and costs of fare media.

Four of the seven transit agencies reported that they believe their transit benefits programs increase revenues, whereas three of the agencies felt that the programs have a neutral or unclear impact. The agencies reporting neutral or unclear impacts are all agencies with universal passes, where the cost of the passes is discounted to employers and often is designed so that the employer does not pay more than it would to cover

**TABLE 20** Estimated revenues associated with transit benefits programs (as of 2003)

Transit Agency	Program Name	Annual Revenue in \$ Million	% of Revenue from Program	Agency's Perception of Impact on Revenues
WMATA	Metrochek	\$177.0	30%	Increase
	Smart Benefits	\$13.8		
	<b>Total</b>	<b>\$190.8</b>	<b>30%</b>	
MARTA	Partnership Program	\$20.0	11% (est.) <sup>1</sup>	Increase
King County Metro	FlexPass	\$6 to \$7	8% to 10%	Increase
	UPass and GoPass	\$10.7	14%	
	Retail programs	\$9 to \$12	13% to 17%	
	Voucher programs	\$6.7 <sup>2</sup>	N/A	
	<b>Total</b>	<b>\$25.7 to \$29.7<sup>2</sup></b>	<b>35% to 41%</b>	
RTD	Eco Pass	\$8.1	17%	Unclear
Metro Transit	Metropass	\$15.1	25%	Neutral
	TransitWorks!	\$10.0	17% (est.)	
	<b>Total</b>	<b>\$25.1</b>	<b>42% (est.)</b>	
VTA	Eco Pass	\$1.7	5%	Neutral
Valley Metro <sup>1</sup>	Bus Card Plus	\$3.6	N/A	Increase

<sup>1</sup> Only the Bus Card Plus program is included here because information was not available for the Private Outlet program.

<sup>2</sup> Commuter Bonus Vouchers not included in total because they may be spent on other fare media, which could result in double counting.

existing transit riders. In contrast, to the extent that a monthly pass program increases the number of employees using transit, it should result in increased revenues. For stored-value card programs, an increase in the number of employees using transit or an increase in the frequency of transit use by existing riders should result in increased revenues.

For all of the programs with data on revenues (provided by the transit agency or developed by the research team based on data from the NTD or the transit agencies), the estimated share of transit agency revenues from the transit benefits program equaled or exceeded the share of system ridership from the program. These figures suggest that employer programs are not losing potential revenue. Although in most cases, the share of ridership and revenues was similar, in a few cases, the estimated share of revenues far exceeded the estimated share of ridership. The largest differential—an estimated 25-percent share of revenues and only an estimated 7-percent share of ridership—was from the Metropass program in Minneapolis/St. Paul. This disparity is somewhat surprising because the Metropass program is designed to be revenue neutral. However, there are several possible explanations for the disparity: (1) a portion of riders receives discounted fares (i.e., older people, students, and people with disabilities); (2) fares within the CBDs of Minneapolis and St. Paul are 50 cents, as compared to the usual \$1.25 local fare; (3) employer programs are geared toward full-fare paying commuters, who often travel longer distances and pay higher fares; (4) some employees may sign up for the program because it is generally inexpensive for them, but they do not ride very frequently; or (5) there are differences in the data reporting between the ridership and revenue figures, so these figures are not totally comparable.

#### *Transit Benefits Program Costs for Agencies Can Vary Considerably*

The costs associated with operating and marketing a transit benefits program for employers were estimated based on the transit agencies' estimates of staff time and other resources, such as marketing and fulfillment budgets. Table 21 provides a summary of these figures for the seven transit agencies interviewed for this study. It also provides estimates of costs as a portion of revenues from the program, and annual costs per rider, analyses which ideally could be used to assess how efficient these programs are in comparison to other marketing efforts. Given limited data, however, such comparisons could not be made. Each of the major components of agency costs associated with transit benefits programs are described below.

**Staff Time.** Staff time differed greatly between programs, from 1 FTE at MARTA to 5.2 to 6.6 FTEs at King County Metro (staff requirements change throughout the year). The number of staff is not correlated with ridership or revenues; rather, the number of staff required to administer a single program appears to be tied most directly to program type. With one exception (the King County UPass program), regardless of ridership or revenues, universal pass programs seem to require a minimum of 2.5 staff. The RTD Eco Pass program has 3.6 FTEs, but it handles far more employers (over 1,000) than the other universal pass programs (which enroll several hundred employers). Presumably the number of staff required for universal pass programs is due to the complexity of these programs; compared with monthly pass programs, universal pass programs require more time with employers, more sur-

**TABLE 21 Estimated costs associated with transit benefits programs (as of 2003)**

Transit Agency	Program Name	Staff Time (FTE)	Marketing Budget	Other Costs	Total Estimated Costs <sup>1</sup>	Costs as % of Revenue	Annual Costs per Rider
WMATA	Metrochek	4	\$300,000	Not specified	-	-	-
	Smart Benefits						
	<b>Total</b>	<b>4</b>	<b>\$300,000</b>			<b>\$510,000</b>	<b>0.3%</b>
MARTA	Partnership Program	1	\$0 <sup>2</sup>		\$83,000	0.4%	\$3
King County Metro	FlexPass	2 to 3	Under \$5,000	Not specified	\$142,000	2.4%	\$4
	UPass and GoPass	.2	\$0		\$14,000	0.1%	<\$1
	Retail programs	2	\$0		\$115,000	1.1%	\$10
	Voucher programs	1 to 1.4	\$0		\$81,000	1.4%	N/A
	<b>Total</b>	<b>5.2 to 6.6</b>	<b>Under \$5,000</b>			<b>\$352,000</b>	<b>1.2 to 1.3%</b>
RTD	Eco Pass	3.6	\$25,000	\$18,500 (fulfillment)	\$293,500	2.4%	\$6
Metro Transit	Metropass	2.25	\$87,500	\$225,000	\$312,500	2.1%	\$21
	TransitWorks!	2	\$0	\$150,000	\$150,000	1.5%	\$13
	<b>Total</b>	<b>4.25</b>	<b>\$87,500</b>	<b>\$375,000 (salaries)</b>	<b>\$462,500</b>	-	<b>\$17</b>
VTA	Eco Pass	2.5	\$26,550	\$240,000 (salaries)	\$266,550	11.1%	\$6
Valley Metro <sup>3</sup>	Bus Card Plus	4	\$0 <sup>4</sup>	Not specified	\$360,000	10.0%	\$30

Dash = not available.

<sup>1</sup> Includes staff time, marketing, and fulfillment. Staff time was calculated based on figures of \$47,250 per staff FTE and \$67,250 per managerial FTE. These figures include salary and benefits and rounded up to the nearest thousand dollars. In all cases, we assumed one manager per separate program and the remainder staff.

<sup>2</sup> Marketing for the Partnership Program is part of overall transit marketing budget; exact figures not available.

<sup>3</sup> Only the Bus Card Plus program is included here because information was not available for the Private Outlet program.

<sup>4</sup> General marketing budget of \$650,000, but not for these programs.

veys, and more frequent repricing. Less complex programs seem to require fewer staff. With the exception of Valley Metro, monthly pass programs used one to two FTEs.

Broadly speaking, staff members operating a universal pass program serve fewer *employers*, but they serve more *employees*. King County Metro's retail programs, Metro Transit's TransitWorks! program, and Valley Metro's Bus Card Plus cover from 80 to 375 employers per FTE and from 3,000 to 6,000 employees per FTE. In contrast, King County Metro's FlexPass, RTD's Eco Pass, and VTA's Eco Pass cover only 30 to 300 employers per FTE, but these programs cover between 14,000 to 17,000 employees per FTE. This seems to point to different strategies depending on the employer pool: Many small employers may be served more efficiently with a monthly pass program, but a universal pass program can reach more employees through large employers. The exceptions are MARTA and Metropass. In the case of MARTA, the discount structure makes it more attractive to large employers because there is no discount available until an employer purchases 1,000 passes. Metropass is unusual in that it does not require employers to purchase passes for all employees, so it probably achieves lower penetration into the potential employee market. See Appendix F for additional

figures on the number of employers and employees served per FTE.

The two most "efficient" programs in serving the largest number of riders with the smallest number of staff are probably not widely replicable. The King County Metro UPass program, which serves students, faculty, and staff at the University of Washington, has upwards of 40,000 participants, yet requires less than one FTE for administration. This is probably because (1) it is a long-established program with an employer motivated to promote ridership, and (2) the large market of potential users includes not only employees but also students (who pay for the program partially through student activity fees). WMATA has four staff for over 200,000 participants, making it highly efficient in serving both employers and staff. There are probably two reasons for this high level of efficiency. First, other organizations in the region assist heavily in marketing efforts, including the Metropolitan Washington Council of Governments' regional Commuter Connections program and Commuter Connections employer representatives in each of the local jurisdictions. Second, the federal government's executive branch is required to provide transit benefits to all its employees, and federal employees account for three-quarters of participating employees.



**Marketing.** Marketing budgets also covered a wide range, from no separate budget to \$300,000; some agencies did not have a marketing budget for transit benefits broken out separately from general transit marketing. The power of a transit agency's marketing budget can be stretched depending on other partners in the region. All seven agencies had other public- or private-sector entities helping market transit benefits to employers. The budget differences may be explained by targeted versus general marketing strategies, effectiveness of specific campaigns, and general awareness of transit benefits within a region. The differences also may also be due to agencies defining their budgets differently.

**Fulfillment.** Most transit agencies, when asked about a fulfillment budget, said that they considered fulfillment part of the salaries paid to employees and did not have separate figures available. Only three agencies had separate budget items for fulfillment, ranging from \$18,500 to \$375,000. Of those three, two included salaries in their figures. Several agencies mentioned related costs such as printing and software, but they could not provide specific figures.

#### *Cost Savings Have Not Been Quantified*

One of the potential advantages of an employer transit benefits program for transit agencies is the potential to reduce the costs associated with cash handling for individual fare transactions. Although the transit agencies generally felt that some of these cost savings might be achieved through their programs, none of the agencies was able to quantify these savings or supply a per-transaction cost of accepting cash payments. Therefore, the agencies' responses in Table 22 are the best information available, and those impressions may or may not accurately reflect the magnitude of the cost savings. To the extent that employer programs capture a large share of total transit agency revenues, it is expected that these programs should reduce the costs associated with cash handling for individual fare transactions. Several agencies commented that they

believed annual pass programs were useful in holding down costs because they reduce the number of passes to be printed and distributed per year. However, the agencies did not have comparative data for annual and monthly passes. Metro Transit thought that the TransitWorks! program did not reduce transactions because participants would have been participating in monthly pass programs anyway as opposed to individual daily cash transactions.

Two agencies said that specific programs reduced cash handling to a high degree. King County Metro made this comment in regard to their monthly pass programs, which sell approximately 46,000 passes per month to employers and to retail outlets who sell them to individuals. Most passes are distributed through retail outlets, and employers can participate on generally the same terms as grocery and drug stores that sell them to patrons. WMATA said the same about its Smart Benefits program, in which transit benefits can be downloaded directly by the employee onto a stored-value card. Both of these programs reduce pass distribution costs.

#### *Ridership, Revenues, and Costs Differ by Program Type*

Ridership, revenues, and costs differ across agencies. It is also interesting to note some general differences between universal and monthly pass programs, both of which are fairly common program types. Table 23 compares selected program characteristics from the three conventional universal pass programs (King County Metro's FlexPass, RTD's Eco Pass, and VTA's Eco Pass) and the three conventional monthly pass programs (MARTA Partnership Program, King County's consignment retail program, and Metro Transit's TransitWorks! program). In this comparison, it appears that universal pass programs are more effective than the monthly pass programs at serving a larger number of employees by focusing on larger employers. However, in relation to the monthly pass programs, the universal pass programs often require more staff to administer, are more complex, and are generally designed to be revenue neutral. In contrast, monthly pass programs are more effective than universal pass programs at increasing revenues and reaching many employers, but they tend to serve a lot of small- to moderate-size employers.

These results generally reflect program design; universal pass programs are generally designed to appeal to larger employers and achieve greater ridership gains by requiring that passes be given to all employees. The comparison confirms the effectiveness of this strategy and perhaps points to different approaches based on the types of employers to be served. Universal pass programs seem to make sense for large employers located where there is existing transit capacity. Monthly pass programs favor smaller employers and are more effective in bringing in revenue per rider. It would be useful to confirm these conclusions with employee survey data to see if there is a difference in the percentage of employees who switch modes based on program type; however, such data are not available.

**TABLE 22 Transit agency perceptions of the extent to which transit benefits programs reduce cash handling**

Transit Agency	Program Name	Reduces Cash Handling?
WMATA	Metrochek	Moderate
	Smart Benefits	High
MARTA	Partnership Program	Moderate
King County Metro	FlexPass	Moderate
	UPass and GoPass	Moderate
	Retail programs	High
	Voucher programs	Moderate/ high
RTD	Eco Pass	Moderate
Metro Transit	Metropass	Moderate
	TransitWorks!	Not at all
VTA	Eco Pass	Low
Valley Metro	Bus Card Plus	Moderate



**TABLE 23 Comparison of universal and monthly pass programs**

Program Characteristics	Universal Pass <sup>1</sup>	Monthly Pass <sup>2</sup>
Pricing Structure	Complex—price is negotiated or tiered based on location of employer	Generally simple and standardized, although may involve discounts for larger purchases of passes
Size of Employer Generally Served	Generally serve employers that are moderate to large in size (average of 50 to 490 employees per employer).	Typically serve employers that are relatively small to moderate in size (average of 15 to 100 employees per employer)
Number of Employers/ Employees	Generally cover fewer employers (80 to 1,000) <sup>3</sup> but more employees (40,000 to 50,000)	Generally serve more employers (200 to 500) but fewer employees (12,000 to 30,000)
Staffing	2.5 FTEs or more to administer	1–2 FTEs to administer
Ridership	Account for 5 to 15 percent of total ridership	Account for 3 to 10 percent of total ridership <sup>4</sup>
Impact on Revenues	Generally designed to be revenue neutral	Generally designed to increase revenues when ridership increases

<sup>1</sup> Table based on general indicators from three universal pass programs—King County Metro’s FlexPass, RTD’s Eco Pass, and VTA’s Eco Pass.

<sup>2</sup> Table based on general indicators from three monthly pass programs—MARTA Partnership program, King County Metro’s consignment retail program, and Metro Transit’s TransitWorks! program.

<sup>3</sup> The Denver RTD program has over 1,000 employers, but the other two have far fewer (80 and 200). Because the Denver program requires 3.6 FTEs to administer, the number of FTEs required to serve employers works out about even.

<sup>4</sup> The percentage of ridership for Atlanta was not available from MARTA staff; we estimate it at less than 10 percent.

The differences associated with different types of programs may indicate that agencies can combine universal pass and monthly pass programs to reach a wider variety of employers. Both King County Metro and Metro Transit offer both universal passes and a monthly pass program, and they receive the highest proportion of revenues through employer programs (over 40 percent). However, the proportion of their ridership that comes from transit benefits recipients is in the middle of the range for this group of agencies (18 to 22 percent and 12 percent, respectively). Given that neither transit agency operates a rail system, and that neither system is located in a dense and transit-rich East Coast city, this may point to an effective strategy for transit agencies in similar circumstances.

#### *Transit Agency Perceptions of Transit Benefits Programs*

**Definitions of Success.** Transit agency staff members who work on transit benefits programs were asked whether they would rate their programs as “very successful,” “somewhat successful,” or “not successful.” Responses are shown in Table 24. Five agencies rated their programs as “very successful.” Some of the reasons cited are the following:

- **Increased ridership and revenues.** These were cited in some way by all of the agencies, indicating that increased ridership and revenues were clear goals of the programs.
- **Congestion and air pollution reduction.** One transit agency cited these benefits specifically because its region has experienced a huge growth in traffic congestion.
- **Good relationships with the business community.** Several agencies mentioned that the program provided them with entrée into the local business community and allowed them to develop relationships that helped create a new constituency for transit and an additional avenue for marketing.

**TABLE 24 Transit agency perceptions of transit benefits program success**

Transit Agency Name	Successful?
WMATA	Very
MARTA	Very
King County Metro	Very
RTD	Mixed
Metro Transit	Very
VTA	Very
Valley Metro	Somewhat

- **Mechanism for rider feedback.** Several agencies mentioned that the programs give them a way to gauge rider response, especially when staff members have direct contact with employees.
- **Improved planning.** One transit agency noted that employer sales aided in the planning process, giving some indication of ridership trends in the near future.
- **Customer loyalty.** Finally, for several agencies the program provided a means to build customer loyalty. One transit agency noted, in particular, that it was proud of its flexibility in meeting customer needs, and another agency noted that the benefits provided by employers are perceived as having real value.

The two agencies that reported their programs were only “somewhat successful” or “mixed” cited the following reasons:

- **Low participation.** One transit agency said that the number of employer and employee participants was below expectations. However, the agency noted that it was pleased that some employers had stayed with the program even in an economic downturn.
- **Difficulty with recruitment.** One transit agency noted that it works in a difficult situation, in which transit has a poor reputation and employers are not receptive to their program. As one staff member put it, “People look at us in horror” when the agency suggests that employees switch to transit.
- **Unclear financial impact.** Denver RTD, who reported their success as mixed, noted that their main reason for this uncertainty was not knowing whether the program was correctly priced. Their concern is that employers are being undercharged for the services their employees consume. RTD anticipates solving this problem with a smart card system to track ridership, but financial issues mean that procuring such a system may be several years off.

**Problems Encountered and Resolved.** Agencies were asked open-ended questions about whether having a transit benefits program for employers had created or solved any problems for their transit agency. Some responses indicated that the transit benefits program created problems with fraud, employee/operator confusion, and crowding. More detail on each issue is provided below:

- **Fraud.** Several agencies with universal passes indicated that they had encountered problems with employees attaching real stickers to ID cards for employers not participating in the program or employees loaning their cards to friends or relatives to ride free.
- **Employee/operator confusion.** One transit agency with a large number of passes and programs reported that they sometimes encounter problems with explaining their systems to staff in other departments, operators, and cus-

tomers. However, the programs have developed to fill specific employer needs, and the flexibility is seen to outweigh the problem.

- **Crowding.** One popular universal pass program brought in so many riders that extra vehicles had to be added to respond to increased demand.

**Agency Responses to Programs.** Several agencies indicated that they made changes to either their operations or to the employer program itself in response to employer and employee demand. These included changes to the following:

- **Routes and service.** Several agencies added stops or made minor modifications to routes to better serve the employees at newly participating employers. In one case, ridership demand grew so much that more vehicles had to be added to routes.
- **Program operations.** One transit agency added an option for pass holders to ride another transit provider, but this was later discontinued. The same transit agency also created an upgrade option for express bus routes.
- **Payment options.** One transit agency discontinued voucher denominations that were infrequently purchased and added another credit card to their list of payment options. Other agencies are looking at online enrollment and reenrollment.

#### Data Gaps on Transit Agency Impacts

Many transit agencies had relatively sparse data on the effects of their employer programs on ridership, revenues, and costs. In order to assess the typical effects of transit benefits programs on transit agencies, additional data would be helpful. Moreover, although agencies provided their impressions on the success of their programs, in order to better gauge success at meeting specific objectives, individual agencies should collect additional data on the following topics:

- **Program enrollment and revenues.** Although every transit agency had good data on the number of employers enrolled, not every transit agency could identify the number of employee participants. For instance, the agency may only know the number of stored-value cards or vouchers that are sold if these are used, but not how many employees are using them (e.g., an employee may receive one or more \$20 vouchers). Likewise, transit agencies should be able to track the amount of revenue received from these programs in order to make a comparison with program costs and thereby determine the program’s effectiveness.
- **Intensity of transit ridership.** Not every transit agency had information available on the level of transit ridership associated with transit benefits users. For instance, in the case of universal pass programs, employees may not ride

transit at all, even though the employer has purchased a pass. Even in programs where employees elect to receive transit benefits, they may choose to ride infrequently. If transit agencies find this to be the case, they may wish to look at ways to boost not only the number of participants, but the frequency with which they ride transit.

- **Trend data.** Trend data showing employer and employee enrollment over time would provide a better indication of factors that have affected enrollment (i.e., whether enrollment changed in response to economic conditions or transit agency changes such as service changes or fare increases). On the micro level, trend data could help determine how ridership changes at participating worksites—for instance, do most impacts occur immediately after implementation of a transit benefit, or does it take several years for information to reach all employees and for travel patterns to be adjusted? Compiled over several agencies at the macro level, trend data could help give agencies without programs some idea of what to expect over time as their programs mature.
- **Program costs and cost savings.** It would be helpful to transit agencies to be able to quantify the costs of their employer programs in terms of staff and marketing budgets, but few agencies were able to do so. Knowing these costs would allow agencies to determine whether the additional expenses of maintaining an employer benefits program are offset by the revenues brought in by the program. In addition, if agencies can demonstrate that the employer programs achieve cost savings through reaching riders more efficiently and cutting down on cash handling expenses, it would help justify the programs in case of potential cutbacks.

## CONCLUSION

Overall, the research findings suggest that transit benefits programs can be effective at increasing transit ridership, reducing vehicle travel, and reducing parking demands at a regional level. Although the impacts of these programs on travel behavior at individual worksites varies on the basis of conditions such as worksite location, parking prices, employer payment, and other factors, transit benefits programs usually can be expected to increase transit use on a regional scale. Transit benefits programs also can support other goals for transit agencies and stakeholders, such as increased revenue consistency for agencies. The design of the transit benefits program and marketing activities will influence the level of new transit ridership, revenues, and costs associated with the program.

In addition to providing information on typical impacts of transit benefits programs, the research suggests that transit agencies and other stakeholders can more systematically evaluate the effectiveness of their transit benefits program efforts. Transit agencies usually track activity measures, such as the number of employers signed up for programs, the number of

passes or vouchers distributed, and the amount of revenue associated with employer sales. Although these measures are very helpful to transit agencies and other stakeholders in understanding the level of interest and participation in their programs, activity measures on their own are not sufficient to determine whether the transit benefits programs are effective in meeting goals such as increasing transit use, reducing vehicle travel, and reducing parking demand. For these types of outcome measures, surveys must be undertaken to understand the effects of transit benefits programs on employee travel behavior. Although conducting surveys does require some expenditure of resources or staff time, several different types of surveys can be conducted (e.g., all commuters, employees at participating worksites, employees who participate in the transit benefits program), each of which can provide valuable information. Transit agencies and other interested stakeholders are therefore encouraged to consider conducting a systematic program evaluation, particularly in regions with traffic congestion and air quality problems where this kind of information can help to inform transportation and air quality planning efforts and transit service planning.

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## APPENDIXES A THROUGH G

The appendixes for this report are the following:

Appendix A: Methodology Used to Calculate Travel Behavior Changes;

Appendix B: Summary Table of Travel Impacts from Employer Surveys;

Appendix C: Descriptions of Employer Surveys;

Appendix D: Analysis Approach and Findings from Mandatory Commute Trip Reduction Regions;

Appendix E: Transit Agency Interview Guide;

Appendix F: Transit Agency Case Studies; and

Appendix G: Transit Agency Data Tables: Participation, Revenues, and Costs.

Appendixes A through G for this report are not published herein; however, they are available online as *TCRP Web-Only Document 27*. To access this document, go to [www4.trb.org/trb/onlinepubs.nsf](http://www4.trb.org/trb/onlinepubs.nsf) and click on "TCRP Web Documents."



Abbreviations used without definitions in TRB publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation